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| Appendices  |
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| **S. M. V. Gwynne** |
|  **December 2009** |



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| Appendix A: Survey for Experts in the Field |

Any comments that you make here will be treated in the strictest confidence. A digest of these comments will be produced for analysis, but at no stage will your name be associated with these comments in a public forum, unless specifically directed otherwise.

Thanks for your time.

**Steven Gwynne**

I hope that the Data Portal will be of value to as wide a group of practitioners as possible. Given this, it is useful to collect some background information in order to understand the requirements of different sections of our community.

*Question 1*

What are your key areas of expertise? For instance, can you list your key educational qualifications and previous employment experience?

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*Question 2*

What are your primary activities in the field? For instance, do you collect data, assess designs/egress assessments, design procedures, develop models, develop theories, employ egress models/hand-calculations, teach/train/mentor, etc.

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*Question 3*

How many years have you been active in the field?

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*Question 4*

We often rely on imperfect, incomplete, and inappropriate data-sets. Can you list the data-sets that you most frequently refer to and employ? This can be in the form of a description, a reference, a link or any other approach that can clearly identify the data-set, your use of it and any comments that you have regarding it. If appropriate, you may certainly indicate data that you have collected data-sets (along with a brief description).

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| Data-Set | Use(s) | Comments |
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*Question 5*

Given your typical activities in the field, what data-sets would you *like* to be available and in what format should they be presented? These could relate to evacuation events/factors that you currently include in your work (or your model), or events/factors that you currently exclude due to a lack of data, but would like to include. Several pieces of information are required: a description of the data-set itself including a general term (e.g. the data you are describing and the label you would associate with it); the resolution at which the data should apply (e.g. for an individual, a population, an egress component, a structure, etc.); the preferred format (e.g. the original raw data, a range, a maximum, an average, a statistical measure, a frequency distribution, in form of a modifier, graphical, descriptive text, original video, etc.); and the associated unit of measurement where relevant.

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| **Description of Data-Set** | **Resolution** | **Preferred** **Format** | **Associated** **Unit** | **Comment** |
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*Question 6*

You are asked to perform an analysis of egress performance by a client/third party. Please describe the factors and variables that would influence your analysis and the types of results that you might produce?

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*Question 7*

Would you make use of the Data Portal described in the attached e-mail? If so, how would you most likely use it?

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*Question 8*

Are they any tools or functionality that you would like to see provided by the Data Portal?

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*Question 9*

What are the major issues that you foresee with the development of the portal?

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*Question 10*

Do you have any further comments?

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Thanks for your time. Once these answers have been compiled I will provide feedback to all contributors. A broader analysis will appear in freely available NIST reports.

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| Steven Gwynne, Ph.D. | Hughes Associates, Inc. |
| Senior Scientist (People Movement) | E-Mail: sgwynne@haifire.com |

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| Appendix B: DATA ACQUISITION MATRIX - Level 1 Document |

This tool is intended to be used during the various phases required to collect human performance data. A matrix is presented to provide an overview for the user. This highlights the scope of the data collection process (i.e., the elements that need to be addressed during the process), and the timeline during which the process passes. These are categorized and presented in order to produce two simple acronyms: PROPOSED (elements); BIPED (stages of the timeline). It is hoped that these acronyms will act as a simple reminder to the researcher of the key data collection components to be addressed. The scope of the data collection is categorized as follows: Procedure; Response; Organization; Population; Objectives; Structure; Environment; and Data acquisition. The timeline is categorized as follows: Blueprint (planning what to do); Investigation (establishing specifically how to do it); Preparation (configuring the data collection elements); Execution (collecting the data); and Data (manipulating the data). The intersection between these categories determines the specific guidance provided.

The cells in the master matrix (labeled as a Level 1 document) represent an element of the data acquisition process at a particular stage in the timeline. Where indicated, a link is provided in the resultant cell that takes the user to guidance relevant to that particular intersection of scope and timeline (labeled as a Level 2 document). (If read in PDF form, the link label matches up with the appropriate appendix heading; e.g., [B,Pr].) The nature of this guidance changes according to the stage of the timeline – moving from questions to prompt the user during the early stages, to a checklist, to guidance on the activities of team members. The relevance of this information will differ according to the nature of event being observed; however, it is still useful for the user to go through the process of addressing or disregarding the guidance provided in order to better frame their approach.

In reality, the user may not need to address all of the elements to the same degree of detail during each of the phases; indeed, many of the guidance may not be relevant in some scenarios. However, it is important that the user is aware of all of the elements and the phases of data acquisition in order to assess whether close scrutiny is required and assess whether elements of the suggested data collection components can be disregarded. In addition, there may be some repetition within the matrix. This is intentional as the user may approach the matrix from different perspectives and/or may omit sections entirely; limited repetition therefore introduces some redundancy in an attempt to prevent vital guidance being overlooked.

The matrix is geared to observing human performance as part of the collection of new data. This may involve manual observations, video, photography, supporting surveys, etc. It is not suited for post-incident interviews, where survivors of a previous real-life incident are involved. Although, the basic elements of the matrix would be the same and the high-level guidance would certainly be useful, the low level guidance does not address the specific factors, planning, and implementation issues that the interview of survivors would require. This would require more specific guidance on the sensitivities involved, interview planning, ethical issues and interview techniques that are not covered here.

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| ***Data Acquisition******Timeline*** | ***KEY ELEMENTS*** |  |
| **Procedure** | **Response** | **Organization** | **Population** | **Objectives** | **Structure** | **Environment** | **Data Acq.** |
| **Procedure employed to manage response of target population** | **The response of the target population** | **The organizational/ administrative issues related to the event** | **The population involved in the event** | **The objectives of the data acquisition exercise.** | **The structure(s) involved in the event** | **The environmental conditions present during the event** | **Data acquisition resources employed during the event.** |
| **What do you want to investigate?** | **Blueprint** | *What procedure do you want the population to follow?*[*[B,Pr]*](#B_Pr_1) | *How might the target population respond during the event?*[*[B,Re]*](#B_Re_1) | *What administrative actions might the event require?*[*[B,Or]*](#B_Or_1) | *What target population is of interest?*[*[B,Po]*](#B_Po_1) | *What do you want out of this event?*[*[B,Ob]*](#B_Ob_1) | *What type of structure is of interest?*[*[B,St]*](#B_St_1) | *What environmental conditions may influence your results?*[*[B,En]*](#B_En_1) | *Given the other BLUEPRINT factors, what resources do you need?*[*[B,Da]*](#B_Da_1) | ***PRE-EVENT*** |
| **How do you get what you want?** | **Investigation** | *Examine procedural issues*[*[I,Pr]*](#I_Pr_1) | *Establish behavioral factors.*[*[I,Re]*](#B_Re_1) | *Negotiate access and complete documentation*[*[I,Or]*](#I_Or_1) | *Determine the population characteristics*[*[I,Po]*](#I_Po_1) | *Establish how key objectives can be met*[*[I,Ob]*](#I_Ob_1) | *Confirm pertinent structural details*[*[I,St]*](#I_St_1) | *Document conditions and management response.*[*[I,En]*](#I_En_1) | *Get resources and confirm acquisition plan.*[*[I,Da]*](#I_Da_1) |
| **How do you implement your plan?** | **Preparation** | *Actions to ensure procedure is executed*[*[P,Pr]*](#P_Pr_1) | *Enable comparison between actual /expected response*[*[P,Re]*](#P_Re_1) | *Ensure organization and acquisition is integrated.*[*[P,Or]*](#P_Or_1) | *Confirm that population is as expected.*[*[P,Po]*](#P_Po_1) | *Ensure that objectives are met by procedure.*[*[P,Ob]*](#P_Ob_1) | *Determine status of structure during event.*[*[P,St]*](#P_St_1) | *Determine/ manage environment during event.*[*[P,En]*](#P_En_1) | *Install/ implement acquisition tools / methods*[*[P,Da]*](#P_Da_1) | **DAY OF EVENT*****PRE-CUE*** |
| **How do you get your data?** | **Execution** | *Apply procedure of interest.*[*[E,Pr]*](#E_Pr) | *Monitor / manage response*[*[E,Re]*](#E_Re) | *Liaise with organization personnel.*[*[E,Or]*](#E_Org) | *Observe changes in population*[*[E,Po]*](#E_Po) | *Ensure acquisition meets objectives*[*[E,Ob]*](#E_Ob) | *Monitor structural components.*[*[E,St]*](#E_St) | *Monitor changes in environment.*[*[E,En]*](#E_En) | *Acquire Data*[*[E,Da]*](#E_Da) | **DAY OF EVENT*****PRE-RESPONSE******RESPONSE*** |
| **How do you understand your data?** | **Data (Extraction and Analysis)** | *Be mindful of event conditions during data extraction.**Ensure that data is extracted in context with the background conditions.* | *Extract Data / Remove acquisition resources*[*[D\_E,Da]*](#D_EDA) | **DAY OF EVENT*****POST-EVENT*** |
| *Analyze data* [*[D\_A,Da]*](#D_ADA) | ***POST-EVENT*** |

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| **DATA ACQUISITION MATRIX: Level 2 Documents****BLUEPRINT*- Questions are provided to prompt the user to consider particular aspects of the preparation process.*** |

***TERMINOLOGY:***

***TARGET POPULATION [TP]: THOSE INDIVIDUALS SUBJECT TO THE PROCEDURE IN PLACE (E.G., AN EVACUEE, A PARTICIPANT);***

***ACTIVE STAFF [AS]: THOSE INDIVIDUALS EMPLOYING THE PROCEDURE IN PLACE (E.G., A FIRE WARDEN).***

**Appendix: [B,Pr]: What procedure do you want the target population to follow and the active staff to implement?**

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| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *What type of procedure leads to the behaviors of interest?*
	+ Experimental? Managed? Phased? Horizontal? Defend in place? Examine *[B,Ob]*
	+ Will it involve the involvement of the entire population, a section, or none at all?
* *Does a procedure need to be developed, or will a structure be selected that has this procedure in place?*
* *Are there documented examples of such procedures?*
	+ Previous incidents? Current occupancies? Research Literature?
* *Are there regulatory issues that constrain the use of these procedures? What are they?*
* *What other procedures might influence the procedure of interest?*
	+ For instance, are there non-emergency procedures (security, operational, etc.) that influence the emergency procedure of interest?
* *What are the key elements of this type of procedure? For instance, expected staff actions, human resource requirements and occupant response.*
* *What technological resources (e.g., notification systems, CCTV, etc.), does this procedure require when implemented?*
* *Do the key behavioral objectives [B,Ob] require a dedicated emergency or non-emergency procedure?*
	+ Will it require access to a structure, an experimental rig, or new equipment?
* *Does the incident need to be unannounced, quasi-announced, or announced?*
* How might this be achieved?
* What mechanisms would be required to inform the population before, during, and after the event?
* If it is to be covert, who are the essential individuals that need to know and can be trusted?
* *Are there limitations regarding the data collection process for certain procedures?*
	+ For instance, in a full evacuation, would it be possible to monitor the entire population?
* *What do you want people (active staff and the target population) to be doing during the event?*
 |
| ***DOCUMENTED FACTOR - PROCEDURAL REQUIREMENTS*** ***Sketch/Notes:*** |

**Appendix: [B,Re]: How might the target population behave during the event?**

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| **Useful References** |  |
| **Example Material** |  |
| * *Do you have information on similar events/incidents outlining the response of the target population? This may also guide your expectations in [B,Pr].*
* *Is there specific information on the target population under comparable scenarios?*
* *What behavioral factors are you interested in?*
	+ *Pre-cue, Pre-response, response, post-response, movement, actions, decisions, influences, etc?*
* *What performance aspects are you interested in? [B,Ac]*
	+ *The time taken to perform? Quantitative measures?*
	+ *The effectiveness/outcome of the performance, conditions experienced, etc? Qualitative factors?*
	+ *The factors that influence performance?*
* *What relevant factors/events might lead to people not responding in accordance with the procedure? [B,Pr]*
	+ *Other procedural issues?*
	+ *Pre-Event issues: use of the building? Security / access issues?*
	+ *Actions of others, other events?*
 |
| ***DOCUMENTED FACTOR - POSSIBLE PARTICIPANT BEHAVIORS; REVIEW OF EXPECTED RESPONSE******Sketch/Notes:*** |

**Appendix: [B,Or]: What administrative actions might the event entail given the partner organization?**

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| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *What organization enables the procedure of interest to be employed?*
	+ *Commercial, federal, academic, military, etc?*
	+ *What are their primary activities?*
	+ *What are their sensitivities?*
	+ *Has this type of organization been exposed to similar incident or events recently?*
* *Does the preferred organization introduce limitations into the data collection process?*
	+ *Are there administrative, political, financial or legal limitations?*
* *What are the benefits of the data acquisition process to the organization? Why would they allow the data collection process to take place?*
	+ *Financial,*
	+ *Public relation,*
	+ *Knowledge*
	+ *Safety (training, procedure, systems, staffing, etc.)*
	+ *Performance (operations, security, etc.)*
	+ *Training, etc.*
* *What problems might the data acquisition cause for the organization?*
	+ *Disruption of service*
	+ *Loss of human resources*
	+ *Security issues*
	+ *Public relations*
	+ *Safety*
* *Does the organization allow/provide for funding opportunities to be explored?*
* *Who are the key personnel/contact points within the organization?*
	+ *Who would you need to contact in the host organization in order to understand the procedure employed?*
	+ *Are you the appropriate person to make this contact? If not, who within your organization should?*
	+ *Do you need to introduce other organizations into the project to mediate/negotiate?*
	+ *Who is responsible for the safety of those involved?*
* *If difficulties are encountered, are there alternative organizations, or different locations within the same organization?*
* *What benefits does this organization bring to the project that others lack?*
* *Does the organization require specific reassurance regarding the safety and validity of the event?*
	+ *Is an ethics review required? If so, does the organization have an internal process?*
	+ *Does your organization have the ability to meet this need?*
	+ *Who else would be able to do this?*
* *What are the administrative issues that need to be addressed?*
	+ *Medical coverage/support*
	+ *Financial issues*
	+ *Waiver issues*
	+ *Insurance*
	+ *Loss of time/earnings for the organization/compensation*
	+ *Anonymity of the organization/occupants, etc.*
* *Are active staff members (e.g., people that will employ the procedure) required or will they be provided by the organization?*
	+ *If so, advertising, contracts, job descriptions, costing, and possible training is required.*
 |
| ***DOCUMENTED FACTOR – ORGANIZATIONAL ISSUES AND ACTIONS******Sketch/Notes:*** |

**Appendix:** **[B,Po]: What is the target population of interest?**

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| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *What is the target population? Why?*
* *What attributes does the population need to have for the data objectives to be met?*
	+ *Number*
	+ *Attributes / Demographics [age/health/ dimensions/gender/education/culture/language issues/background/education, etc.]*
	+ *Location*
	+ *Impairments*
	+ *Activities*
	+ *Information/experience*
	+ *Training*
	+ *State*
	+ *Skills/experience*
	+ *Distribution*
	+ *Roles*
	+ *Familiarity /Frequency of building use*
	+ *Exposure to procedural / environmental / structural / organizational factors.*
* *Are there special considerations required, or can the objectives be met through the general population?*
* *If these requirements are not met, is it possible to introduce a new target population?*
	+ *How would this population be obtained?*
* *Is it possible to focus on a sub-population? What portion of the population will be involved in the event?*
 |
| ***DOCUMENTED FACTOR – SET OF POPULATION ATTRIBUTES OF INTEREST******Sketch/Notes:*** |

**Appendix:** **[B,Ob]: What do you want out of this event?**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *What data is required and why?*
* *How is this data-set normally produced and presented?*
	+ *Expected format?*
	+ *Level of detail? Refinement?*
	+ *Normal scope of data? What factors are addressed?*
	+ *Do you have other examples of this data?*
	+ *Why are the previous examples of this data not adequate?*
* *How will it be used?*
	+ *Theory?*
	+ *Engineering calculation?*
	+ *Model development?*
	+ *Model validation?*
	+ *Model application?*
* *What do you want out of the data?*
	+ *Increased knowledge / theory development*
	+ *Fulfill an application/project requirements*
	+ *Publicity*
	+ *Proposal development*
	+ *Establish relationship*
* *What other parties will be interested in it? Who are the stakeholders?*
	+ *Can these parties help improve / facilitate the event?*
* *What analytical techniques will be used to draw meaning from the data?*
	+ *What level of confidence is required in the data? Statistical? Anecdotal? Etc?*
* *How is the data to be stored?*
* *How is the data to be presented?*
	+ *In what arena / medium?*
 |
| ***DOCUMENTED FACTOR - LIST OF OBJECTIVES******Sketch/Notes:*** |

**Appendix:** **[B,St]: What type of structure is of interest?**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *What occupancy type or structural components are of interest?*
* *What examples of these*
	+ *are Local*
	+ *are Accessible*
	+ *Belong to organizations with whom you have a relationship*
	+ *are Available*
	+ *can be Constructed.*
* *Are there dimensional requirements?*
	+ *No. of floors*
	+ *Footprint / Dimensions*
	+ *Height of structure*
	+ *Height of floor space*
* *Are there use/occupancy requirements?*
	+ *Access limitations? Refer to [B, Or]*
	+ *Presence of amenities?*
	+ *Presence of specific terrain?*
* *Are there component requirements?*
	+ *E.g., certain types of doors, elevators, etc.*
* *Are the location requirements?*
* *Are there structural requirements?*
 |
| ***DOCUMENTED FACTOR - SET OF STRUCTURAL COMPONENTS OF INTEREST******Sketch/Notes:*** |

**Appendix:** **[B,En]: What environmental conditions may influence your results?**

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| **Useful References** |  |
| **Example Material** |  |
| * *Are there specific environmental conditions of interest that need to be present, or excluded from the scenario?*
	+ *For instance, smoke, temperature, narcotic gases, irritant gases, debris, water, weather conditions, etc?*
* *Are these environmental conditions potentially harmful? Does this harm need to be managed?*
* *Are these environmental conditions inside of the structure, outside or both?*
* *What season will it be when the observations are made? Is it relevant?*
* *What is the desired weather for the event in question?*
* *What environmental conditions do you want to influence performance?*
	+ *Are these desirable?*
	+ *Can these be controlled?*
	+ *Do they require access or equipment to control them?*
	+ *Who has this access or equipment?*
* *Are you responsible for managing/generating the environmental conditions? If so, what equipment does this require?*
* *Are you interested in the physiological, behavioral, physical, sociological, or procedural impact of the environmental conditions?*
* *Does the target population normally take measures to address these environmental conditions?*
	+ *Winter clothing, umbrellas, etc.*
* *Do the environmental conditions interact/interfere with the data collection / procedural activities?*
* *What are the ambient/desired lighting levels?*
* *How do you return the environmental conditions back to normal after the event?*
 |
| ***DOCUMENTED FACTOR - SET OF ENVIRONMENTAL ATTRIBUTES OF INTEREST******Sketch/Notes:*** |

**Appendix:** **[B,Da]: Given the other BLUEPRINT factors, what data collection resources do you need?**

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| **Useful References** |  |
| **Example Material** |  |
| * *What is the best approach to collecting data that meets the objectives?[B,Ob]*
	+ *Reliable*
	+ *Credible*
	+ *Cost-effective*
	+ *Ethical*
* *What background information is required for the data to be meaningful? For instance, what context needs to be provided in order for the data to be understood?*
* *What data collection methods/tools are needed?*
	+ *During the event: video, camera, audio, manual, RFID, participant observer, etc.*
	+ *Survey [postal, on site, web-based] , interview, etc.*
	+ *Why should these be selected?*
	+ *Rooming, technical equipment, etc.*
	+ *Are these available given the findings of [B,Or]?*
* *Are there existing means by which to collect the data, or do new technologies need to be introduced in the structure?*
* *Can this equipment be purchased? How much does this equipment cost?*
* *Can it be constructed?*
* *Given the procedural expectations/requirements outlined in [B,Pr], can the results of this procedure be captured using the data collection method selected*?
	+ If not, is it possible to gain a representative sample of the entire procedure? For instance, can the application of the procedure to one floor of a structure be observed and recorded?
* *Do you have previous examples of where this type of data was collected or where the data collection methods/resources were applied?*
* *Do you have the skill-set to apply these resources and perform subsequent analysis?*
* *Do people in your organization have the necessary skill-set to apply these resources?*
* *What data format is appropriate for this data?*
* *What method of storage will be available?*
* *What equipment is required for this storage to take place?*
* *How will the data be extracted from this storage?*
	+ *Will specialist tools be required?*
	+ *Will the data have to be destroyed after analysis?*
* *Are there issues of privacy and/or anonymity to address?*
	+ *Can your resources be modified to address this?*
* *How is the data going to be used?*
	+ *How does influence the collection process?*
* *Who will be examining/extracting the information from the data-set?*
	+ *What is their training, experience and expertise?*
 |
| ***DOCUMENTED FACTOR - SET OF DATA ACQUISITION RESOURCES REQUIRED******Sketch/Notes:*** |

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| **INVESTIGATION *– A range of questions and checklists are provided to remind the user of the factors that may be relevant to the observation at hand.*** |

***TERMINOLOGY:***

***TARGET POPULATION [TP]: THOSE INDIVIDUALS SUBJECT TO THE PROCEDURE IN PLACE (E.G., AN EVACUEE, A PARTICIPANT);***

***ACTIVE STAFF: [AS] THOSE INDIVIDUALS EMPLOYING THE PROCEDURE IN PLACE (E.G., A FIRE WARDEN).***

**Appendix:** **[I,Pr] - Examine procedural issues employed by active members of staff.**

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| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| Factor | Attributes | Questions /Actions | Addressed (X) |
| Nature of Procedure |  |  |  |
|  | Type | Whether it is managed, phased, zoned, staged, etc. |  |
|  | Scope | Who is involved? Sections of the structure/population?  |  |
|  | Objective | Does the procedure require evacuation, shelter, etc. |  |
| Management Structure |  |  |  |
|  | Active Staffing | What is the chain of command during the procedure employed? |  |
|  | Command / Controland Communication | What is the passage of information during an incident?Where is information sent in order for decisions to be made?Who is involved in this process?What communication systems are in place? |  |
| Notification System  |  | For instance, the emergency notification system. |  |
|  | Visual | Is graphical information provided; e.g., via LED, strobes, screens, etc? What information is provided? |  |
|  | Aural / Audible | Is aural information provided; e.g., via bells, tones, voice, etc?What information is provided? What is the message? What is the nature of the tone?  |  |
|  | Other | Are other modes of notification employed; e.g., vibrating devices, handheld, etc? |  |
|  | Coverage | Is the entire structure covered by the notification system in place? |  |
|  | Visibility / Audibility  | Does the information reach the target population? |  |
|  | Intelligibility | Can the information provided be understood? |  |
| Additional notification systems |  | For instance, non-emergency notification system. |  |
|  |  | Are there additional non-emergency systems in place; e.g., PA system, screens, monitors, PC, etc?Are these systems de-activated during an emergency? |  |
| Active Staffing Levels |  |  |  |
|  |  | How many active staff members are available during the emergency?Where are they located?How are these accounted for? Are these active staff already present, or do they need to be recruited, trained and informed? |  |
| Responsibilities of Active Staff |  |  |  |
|  |  | What are the responsibilities of the active staff members?Are non-active (i.e., unplanned/unintended) members of staff expected to help assist in the procedure? |  |
|  |  | Do these staff members carry equipment to assist in their activities? For instance, communication devices, registers, bullhorns, etc? |  |
| Training of Active Staff |  |  |  |
|  |  | What training is provided to the population?What training is provided to the active staff members?Who is responsible for this training?Is this documented? |  |
| Documentation |  |  |  |
|  |  | What documentation is available describing the emergency procedure? |  |
|  |  | What is the format of this documentation? Reports? Posters? Leaflets? |  |
|  |  | Who produces these documents?Is the AM responsible for this? |  |
|  |  | Who has access to this documentation? |  |
|  |  | Can this document be referenced/described in future publications of the data produced? |  |
| Drills Conducted |  | Has the procedure been tested?Were these tests conducted in order to improve the effectiveness of the procedure, or to measure the time taken to enact the procedure; i.e., as a training exercise or an assessment?Are lower-level exercises performed to measure individual responsibilities? For instance, ability to operate a fire extinguisher, locate a stairwell, etc? |  |
|  |  | Are drills conducted? How frequently? Are these drills announced /unannounced/ quasi-announced?Who is involved? Are external agencies involved?Do they fully represent the ‘procedure’ in place?Are they documented/recorded/reported?Can you get access to previous reports? What were previous performance levels? Have there been previous incidents during the drills? |  |
| Previous Incidents |  |  |  |
|  |  | Have there been previous emergency incidents on site?Who was involved?What was the response?Are these incidents documented? Do you have access to these documents?Have these required the implementation of the emergency procedure? |  |
| Suppression |  |  |  |
|  |  | Is there a suppression system in place?What is the coverage of this system?Has it ever been activated? How often is it tested? |  |
| Detection |  |  |  |
|  |  | What is the nature of the detection system in place?What is the nature of the signal provided?If an incident is automatically detected, how is this reported, and what impact does this have?Is there any information on the effectiveness of this system? For instance, manufacturer performance data, etc. |  |
| Passive Fire Systems |  |  |  |
|  |  | Is compartmentalization used?Where are the fire doors? What protection do they afford?Are they are automatic systems in place to close doors during an incident? |  |
| Emergency Lighting |  |  |  |
|  |  | What is the nature of the emergency lighting system?What is the coverage?What are the lighting levels?When it is activated? |  |
| Fire-fighting Equipment |  |  |  |
|  |  | Is there fire-fighting equipment?Where is located?What is its nature?Are people trained to use it?Who could/should use it? |  |
| Signage |  | Is it possible to get the location of signs noted on a schematic/floor-plan, etc? |  |
|  | Information Provided | Emergency, routine information, security warnings, commercials, etc. |  |
|  | Intended Use | Emergency, Operational, Information, etc. |  |
|  | Type | Static / Dynamic, Regulation adhered to, Text/Graphic/Mixed, etc. |  |
|  | Design | Format, Content, Color, etc. |  |
|  | Size | Sign? Graphics? Lettering?  |  |
|  | Locations | Location of signs throughout the space. |  |
|  | Routes Indicated |  |  |
| Assembly Points  |  | Is it possible to get the location of assembly points noted on a schematic/floor-plan, etc? |  |
|  | Location | In relation to the structure |  |
|  | Marking | Is it signed? |  |
|  | Capacity | Number of people that can be located at the assembly point? |  |
|  | Nature | Is it covered, accessible, apparent? Does it have a means of communication?  |  |
| Population Vulnerabilities |  |  |  |
|  |  | Are special provisions made in the procedure to address vulnerable sections of the population; i.e., those suffering with an existing impairment? Will these sections be involved in the incident?Do special provisions need to be made regarding these populations?What is the nature of these vulnerabilities? Innate, situational, experiential, procedural? Where are they located within the structure? |  |
| Security procedures |  |   |  |
|  |  | What are the internal/ perimeter/external security measures? Where are they located?What staff members are involved?What equipment is involved?What impact does this have on movement about the space?What impact does an evacuation have upon the security procedures in place?Are the security procedures applied and managed separately from the other procedures in place? |  |
| Operational / service / routine procedures |  |  |  |
|  |  | Are there dedicated facilities/amenities/services that influence the routine use of the building?What staff members are involved?What impact does this have on movement about the space?What impact does an evacuation have upon the routine operational procedures in place? |  |
| Other procedures  |  |  |  |
|  |  | Are there procedures in place that govern non-fire emergencies? What is the nature of these procedures?How are fire emergencies distinguished from non-fire emergencies? Is this determination manual or automatic?Are there traffic management procedures in place? Do these interfere with the passage of individuals during the event? |  |
| Experimental procedures |  |  |  |
|  |  | Have dedicated experimental procedures been produced to manage the event?How are these stored? Where are they?Will they be distributed? If so, to whom?Do the procedures describe the activities of the active staff, the target population, etc?Who wrote these documents? Is the AM responsible? Is there quality control over the data collection/extraction process? |  |
| Outside intervention |  |  |  |
|  |  | What are the expected activities of external agencies, such as emergency responders? Where are they located?How do they get into the structure? What is their anticipated arrival time?What resources do they bring?Are medical/first aid staff required? If so, are they on hand? |  |
| ***OUTCOME: A PROCEDURE (OR AN UNDERSTANDING OF AN EXISTING PROCEDURE) DESCRIBING THE ACTIONS OF ACTIVE STAFF[AS] AND THE TARGET POPULATION[TP].******OUTCOME: TIMELINE OF EXPECTED MOVEMENT/BEHAVIOR OF STAFF AND TARGET POPULATION.******OUTCOME: KEY EVENTS/ACTIONS OF INTEREST WITHIN THIS MOVEMENT/BEHAVIOR.*** ***OUTCOME: ACTIVE STAFF [AS] REQUIRED TO IMPLEMENT PROCEDURE. REDUNDANCY/RESERVE [AS] AVAILABLE.******Sketch/Notes:*** |

**Appendix:** **[I,Re] - Establish behavioral factors that might lead target population to divert from the intended procedure being implement by active staff. For instance, have there been factors in previous events that have indicated potential behavioral responses in the planned event.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| Factor | Attributes | Questions /Actions | Addressed (X) |
| Pre-Event |  |  |  |
|  | Use of building | What areas of the building would be people be familiar with?How do people move around the building? Stairs, elevators, etc. Are there areas with limited or restricted access? If so, who has access, how is this access constrained?Are there areas in which people would typically gather?How do people normally arrive at the structure?Does this mode of arrival influence how they would enter and leave the structure?How does the structure interact with adjacent transport systems? For instance, where it the parking, rail station, pedestrian paths, etc? |  |
|  | Access routes / Doorways | Where would they normally enter and leave the building? |  |
|  | Time spent in structure | Are people frequent visitors?How long have they belonged to the organization, etc? |  |
|  | Fluctuation | Are there seasonal/monthly/weekly/daily differences in the use of the building?When will the event take place in relation to daily events; e.g., arriving, meals, leaving, etc? |  |
|  | Foreknowledge  | How much will people know in advance about the event?Who will tell them about this? |  |
|  | Experience  | How familiar are people with the procedure in place (with what to do during the event)?Will they have taken part in similar events?Will they have had specific training? |  |
| Pre-Response / Response |  |  |  |
|  | Individual attributes | Physical, cognitive, social, psychological, demographic, language skills, fitness, fatigue, etc. |  |
|  | Location  | Room, floor, in relation to key egress components, etc. |  |
|  | Proximity to incident | In room of origin, same space, same floor, same building, etc. |  |
|  | State / Alertness (awake) | Will people in the building be awake?Will people be intoxicated?Will narcotic drug use be an issue? |  |
|  | Activities | What are people expected to be doing at the time of the incident?How long will they have been engaged in this action? |  |
|  | Engagement / commitment to activity | What will they have invested in conducting that activity? How engaged will they be?How focused will they be on this activity?Will they be reluctant to leave this activity? |  |
|  | Access to information | Will they be familiar with the alarm signal?Will they be able to distinguish the signal from other background noise?Will they be provided with information on how to respond?Will they have sufficient information on how to respond?Will they be able to follow the instructions provided? |  |
|  | Notification system in place | How much information is provided? What is the content of the message? What is the signal?Does it interrupt the current activity of the population?What is the system coverage?Can it be perceived?Is it credible? |  |
|  | Presence of staff | Are active staff nearby?Are they assertive?Are they in positions of responsibility?Are they well-trained?Are they taken seriously (credible)? |  |
|  | Visual access to event/others | What cues are produced by the incident?Do the cues go beyond the room of origin? |  |
|  | Training / experience | Does the individual exposure level to drills and exercises influence their reaction/response to the event?Do they have reminders/documents/devices to guide them during an incident? |  |
|  | Impairment / health issues/ fatigue / encumbrance | Cognitive, sensory, social, medical, situational, temporary, etc. |  |
|  | Language / cultural issues | Can people understand the messages/information/notification/ signage being provided to them? Are they familiar with the safety concepts being employed?Do they have reduced expectations regarding the safety systems in place? |  |
|  | Organizational / hierarchical issues | Do the roles and relationships in the structure influence reaction / response to the incident? For instance, are people reluctant to use an exit given the sanctions that would normally be imposed upon them?Presence of safety culture.Would sub-populations be unfamiliar with certain areas of the structure through lack of use? |  |
|  | Environmental conditions | Orientation of space, complexity, deteriorating environmental conditions, ambient conditions (noise/visuals), debris/clutter/waste, temperature, visibility, etc. |  |
|  | Familiarity with structure | Known routes, preferred means of egress, etc. |  |
|  | Role / social affiliation | Position in social hierarchy/organization, status, responsibilities. |  |
| ***OUTCOME: STORYBOARD OF BEHAVIORAL FACTORS THAT MIGHT INFLUENCE ADHERENCE OF TARGET POPULATION TO PROCEDURE*** ***Sketch/Notes:*** |

**Appendix:** **[I,Or] - Negotiate access and complete documentation**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *Draft initial contact letters to potential organizations*
	+ *Outline objectives, what is involved, benefits to the potential organization, costs, potential impact, why the potential organization has been selected, your credentials.*
	+ *Suggest follow-up for further action.*
* *Organize site visit*
	+ *Primary goal to present overview of event and gain interest*
	+ *Examine appropriateness of structure*
	+ *Establish the internal process- what issues need to be addressed within the organization to allow the event to take place*
	+ *Legal / PR / Safety / Policy*
	+ *Establish the limits of responsibility – yours and the organization*
* *Establish what is expected/acceptable for the organization:*
	+ *issues of anonymity,*
	+ *data ownership/sharing/release/storage,*
	+ *management of the event,*
	+ *access to the site,*
	+ *access to existing data (e.g., previous incidents/events),*
	+ *access to resources (human/material/technology),*
	+ *disruption*
* *Prepare ethics/review documentation if necessary. If not necessary, still establish potential hazards/risks and how you address them – go through your own inhouse review process.*
* *Organize follow-up meetings*
	+ *Primary goal to gather information – allow event planning [I,P]*
	+ *Ensure that the organization is still willing to participate*
	+ *Share information with the organization*
* *Organize preparation activities*
	+ *The days involved in the incident*
	+ *Security clearance*
	+ *Access during these days (during the day/after hours, etc.)*
	+ *Expected staff/population activities*
	+ *The nature of the equipment to be used/brought into the structure.*
	+ *Information control*
* *Develop/Present Procedure (if new procedure required)*
	+ *Actions of active staff*
	+ *Desired response of target population*
 |
| ***OUTCOME: AGREEMENT WITH ORGANIZATION TO TAKE PART ALONG WITH NECESSARY PERMISSIONS, WAIVERS AND AGREEMENTS******OUTCOME: ESTABLISH CONTACTS – MANAGEMENT LEVEL (PERMISSIONS) / PROCEDURAL LEVEL (ACTIVE DURING EVENT)******Sketches/ Notes:*** |

**Appendix:** **[I,Po] - Determine the target population’s characteristics**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| Factor | Attributes | Comments | Addressed(X) |
| Label |  | Identification |  |
| Nature |  |  |  |
|  | Relationship to structure | Are people occupants, visitors, residents, participants, etc? |  |
|  | Social Roles/Ranks | What is the range of roles and positions within the structure?Are people associated through familial, employment, professional, social relationships? |  |
|  | Procedural | What is the proportion of population that is actively engaged in the event procedure; i.e., what is the number of people involved in employing the procedure? |  |
| Number / Size |  |  |  |
|  |  | How many people are in the building?Does this fluctuate? If so, why? |  |
| Distribution |  |  |  |
|  |  | Where are people within the structure? |  |
|  | Throughout building |  |  |
|  | Specific locations | Where are people according to floors/ internal spaces, etc. |  |
| Social Groupings |  |  |  |
|  |  | Are people isolated in the building?Are they in social groups?What is the make-up of these groups? |  |
| Visual access |  |  |  |
|  |  | Can people see each other given the routine use of the structure? |  |
| Language |  |  |  |
|  |  | What is the range of languages present within the structure? |  |
| Culture |  |  |  |
|  |  | What is the cultural background of those within the structure?Safety expectations, familiarity with safety concepts, etc. |  |
| Education |  |  |  |
|  |  | What is the educational level of those within the structure? |  |
| Activities |  |  |  |
|  |  | What activities are people engaged in?Might their commitment to this activity delay their response to the event?Is their attention focused on this activity to the exclusion of other cues and information? For instance, if in a movie theatre where the individual’s attention is clearly focused. |  |
| Familiarity |  |  |  |
|  |  | Is the population familiar with the building? How does influence their use of the structure? How do they enter the structure? |  |
|  | Ingress | How do people normally enter the structure? |  |
|  | Circulation | What facilities are people most likely to use during routine structure operations? |  |
|  | Egress | How do people normally leave the structure? |  |
| Training of the Target Population  |  |  |  |
|  |  | Has the population been exposed to dedicated safety training?Is there any relevant literature / documentation to which they have access?Is the target population exposed to the performance of drills?How frequently does this occur? |  |
| Expertise |  |  |  |
|  |  | Is there an understanding of safety principles within the population?Can they operate the equipment needed to complete the procedure? |  |
| Experience |  |  |  |
|  | Structure | How long have the population been using the structure? |  |
|  | Incidents | Have they experienced previous incidents? Are records kept on such incidents? |  |
|  | False alarms | Have they experienced previous false alarms?Are records kept on false alarms? |  |
| Physical Dimensions / Anthropometrics |  |  |  |
|  | Height | What is the range of heights within the population? |  |
|  | Weight | What is the range of weights within the population? |  |
| Age Range |  |  |  |
|  | Distribution |  |  |
|  | Presence of children |  |  |
|  | Presence of elderly |  |  |
| Gender |  |  |  |
|  | Male |  |  |
|  | Female |  |  |
|  | Other |  |  |
| Impairment / Movement Issue |  |  |  |
|  | Visual |  |  |
|  | Aural |  |  |
|  | Cognitive |  |  |
|  | Other |  |  |
|  | Encumbered |  |  |
|  | Pregnant |  |  |
|  | Obesity |  |  |
|  | Fitness levels |  |  |
|  | Existing Health Issues |  |  |
| Health |  |  |  |
|  | Incident-related injuries | Are there injuries / health issues that have been produced by the incident? What are they? |  |
|  | Incident-relatedfatalities | Are there fatalities that have been produced by the incident? What are they? |  |
| ***OUTCOME: CLEAR UNDERSTANDING OF THOSE TAKING PART AND THEIR RELATIONSHIP WITH THE STRUCTURE******Sketches/ Notes:*** |

**Appendix:** **[I,Ob] – Establish how key objectives can be met**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| * *Does the current situation allow the original data objectives to be met?*
	+ *Should you adjust your data objectives?*
	+ *What impact might these adjustments have upon the intended application?*
	+ *Will other applications now be possible, in addition or instead of the current application?*
	+ *Do you have examples of these changes required and their impact?*
* *Does the current scope/detail of the target data influence the intended application?*
* *Do the current objectives require changes in the collection techniques/tools?*
* *Do the current objectives require changes in the extraction/analytical approaches adopted?*
* *Do the current objectives require changes in the presentation of the data?*
* *Have additional interested parties been identified? Does this influence how the data is collected / analyzed/ presented?*
 |
| ***OUTCOME: CORRESPONDENCE BETWEEN INTENDED PROCEDURE, DATA ACQUISITION AND OBJECTIVES******Sketch/Notes:*** |

**Appendix:** **[I,St] – Confirm pertinent structural details**

**Structure Overview**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| Factor | Attributes | Questions | X |
| Label  |  |  |  |
| Name  |  |  |  |
| Address  |  |  |  |
| Occupancy type / Use |  |  |  |
| Height  |  |  |  |
| # Floors |  |  |  |
|  | Floor heights |  |  |
| Footprint / Area |  |  |  |
| Age of the building |  |  |  |
| Fire history |  |  |  |
| Date  |  |  |  |
| Season  |  |  |  |
| Floor layout |  |  |  |
|  | Internal separation  |  |  |
|  | Visibility of exits |  |  |
|  | Configuration (use) |  |  |
| Surrounding areas |  |  |  |
|  | Transport access |  |  |
|  | Parking  |  |  |
|  | Neighboring structures |  |  |
|  | External conditions | Terrain immediately surrounding structure |  |
|  | Weather |  |  |
| Perimeter access |  |  |  |
|  | External exits |  |  |
|  | Security  |  |  |
|  | Main entrance |  |  |
|  | Access management |  |  |
| Lighting system |  |  |  |
| Electrical system |  |  |  |
| Stair configuration |  |  |  |
|  | Number  |  |  |
|  | Location  |  |  |
| Escalator configuration |  |  |  |
|  | Number |  |  |
|  | Location  |  |  |
| Ramp configuration  |  |  |  |
|  | Number |  |  |
|  | Location  |  |  |
| Elevator configuration |  |  |  |
|  | Number |  |  |
|  | Location  |  |  |
| Tunnelconfiguration |  |  |  |
|  | Number |  |  |
|  | Location  |  |  |
| Travelator configuration |  |  |  |
|  | Number |  |  |
|  | Location  |  |  |
| Ramp configuration |  |  |  |
|  | Number |  |  |
|  | Location |  |  |
| ***COMPONENT NUMBERING SYSTEM EMPLOYED******For instance [Floor | Component Type |Compass Direction], or [Floor | Component Type | Cell #] (if a grid is used), [Floor | Component Type | Number], etc.*** |
| ***OUTCOME: PLAN OF STRUCTURE AND DETAILED UNDERSTANDING OF KEY COMPONENTS AND THEIR ATTRIBUTES******Sketches/ Notes:*** |

**Structural Component: Doorway**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions / actions  | Addressed (X) |
| ***DESCRIPTIVE*** |
| Label  |  | Identification  |  |
| Nature  |  | Single / multiple – part of a set, etc. Grouping/ Configuration |  |
| Type  |  | Revolving, leaf, open, sliding, etc. |  |
| Condition  |  | Age, damage, etc. |  |
| Opening Mechanism |  | Turn handle, key , panic bar, latch, etc. |  |
| Direction of operation |  | Does it open towards or away for the flows adjacent to it? |  |
| Magnetic Release |  | Is the door released during an incident? |  |
| Material  |  | Is the door made of wood/glass/metal, etc? |  |
| Status  |  | Open/closed/locked/blocked/unavailable |  |
| Use  |  | Routine / emergency/entrance, etc. |  |
| Connected spaces |  | What are the egress components adjacent to the door? |  |
| Visual access |  | How well can it be seen from adjoining components?Is it obscured, camouflaged, or badly lit, etc?Is there associated signage with the door? |  |
| Appearance  |  | Does the component look like it is in use and that it affords a means of egress? For instance, is there a chain across it, a panic bar, etc?Does it provide an attractive option to the evacuee, or does its appearance discourage use? For instance, does it lead directly to the outside? |  |
| Approach  |  | What is the angle at which the individual approaches the component? Direct path, right angle turn, etc. Does the individual approach the component at an oblique angle, or head on?Relationship to population flow. |  |
| ***NUMERICAL*** |
| Width  |  |  |  |
|  | Physical  |  |  |
|  | Effective  |  |  |
| Height  |  |  |  |
| Weight  |  |  |  |
| Access  |  | Clear / debris / blockages / nature of the approach, etc. |  |
| **Sketches / Notes:** |

**Structural Component: Stair**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions | Addressed(X) |
| Label  |  | Identifying label given to stair object. |  |
| Type |  | Scissor / enclosed / [solid or framework] , etc. |  |
| Nature  |  | Single / multiple – part of a set, etc. Grouping/ Configuration |  |
| Adjacent / Connecting floors |  | Floors associated with stair/ which have access to stair/through which the stairs run, etc. |  |
| Location  |  | Internal location, external, position within floor, etc. |  |
| Approach / Access to stairs |  | Relationship between stair door / approach / landings.Relationship to population flow. |  |
| Visual access |  | How well can the stair be seen from the adjoining spaces?Is it obscured, camouflaged, or badly lit, etc?Is there associated signage with the door? |  |
| # flights/landings between floors |  |  |  |
| Direction of descent |  | Clockwise / counter-clockwise |  |
| Dimensions / configuration of landings |  | Size and shape of landings. |  |
| Configuration of flights / landings |  | Relationship between flights and landings. Right angles / 180 / nature of connection, etc |  |
| Steps  |  |  |  |
|  | # steps / flight |  |  |
|  | Dimensions (Riser height / tread depth) |  |  |
|  | Appearance | Solid, grill, etc. |  |
|  | Nosing  | Recessed, perpendicular, etc. |  |
|  | Covering  | What material is used to cover the steps? |  |
|  | Edge of steps | Is the edge of the step marked? |  |
|  | Consistency  | Are the steps the same dimensions, condition, appearance, etc? |  |
|  | Condition  | Debris / damage / etc. |  |
|  | Material Used in Construction  | Are the stairs constructed from metal, concrete, wood, etc. |  |
|  | Diagonal distance between landings | Approximation of travel distance. |  |
|  | Occupiable area of flight | Combined plan area of steps in a flight that can be occupied by evacuees. |  |
| Clear Stair Width |  | Usable width of stair. |  |
| Effective Stair Width |  | Derived width of stair that is likely to be used. |  |
| Handrail  |  |  |  |
|  | Projection from wall |  |  |
|  | Description  | Rounded, flat top, solid, etc. |  |
|  | Material used  |  |  |
|  | Height from the step |  |  |
|  | Number  | 0/1/2/ etc |  |
|  | Location  | One side / both sides / central / etc. |  |
| Clear head room |  | Step to ceiling or the bottom of stair above |  |
| Lighting  |  |  |  |
|  | Normal  |  |  |
|  | Emergency levels |  |  |
| Access  |  | Can you leave the stair once they have been entered? |  |
| Sign / guidance  |  | Presence / illumination levels, etc. |  |
| Sound levels |  | During normal / emergency levels. Can an alarm be heard clearly within the stair? |  |
|  |  | Is there much spill over of alarm sound between floors? |  |
| Wall material |  |  |  |
| Dimensions of stairwell |  | Dimensions of the structure encasing the stair. |  |
| Status |  | Open/closed/locked/blocked/unavailable |  |
| **Sketches / Notes:** |

**Structural Component: Horizontal Component**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions | X |
| Label  |  |  |  |
| Foot print/Area |  | Area occupied / Effective area occupied given boundary layer |  |
| Height  |  |  |  |
| Type |  | Corridor, room, etc. |  |
| Primary function/Use |  |  |  |
| Adjacent components |  | Nature of adjoining spaces. |  |
| Points of access |  |  Connectivity to adjoining spaces |  |
| Visibility of points of access |  | Are access points signed? Do they have different lighting conditions? Do they have different affordances? Are some innately more attractive? |  |
| Status |  | Open/closed/locked/blocked/unavailable? |  |
| #exits |  |  |  |
| # escalators |  | Nature of connectivity |  |
| # elevators |  | Nature of connectivity |  |
| # travelators |  | Nature of connectivity |  |
| #ramps |  | Nature of connectivity |  |
| Lighting levels |  |  |  |
| Internal objects |  |  |  |
| Internal configuration |  | Presence of internal walls, separators, furniture, temporary fixtures, etc. |  |
| Maximum population size  |  | Code / Expected / Current |  |
| Background Conditions/Pollution |  | Noise, visuals, etc. |  |
| Floor coverings |  | Does it aid in movement? Surface conditions? |  |
| Wall coverings |  | Roughness, etc. |  |
| **Sketches / Notes:** |

**Structural Component: Elevator**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions | X |
| Availability |  | Is it working/operational/broken/being repaired/out of service? |  |
| Type |  | Express . emergency, etc. |  |
| Nature  |  | Single / multiple – part of a set, etc. Grouping/ Configuration |  |
| Label  |  |  |  |
| Age |  |  |  |
| Capacity |  |  |  |
| Operator / Constructor |  |  |  |
| Speed between floors |  |  |  |
| Floors served |  |  |  |
| Door opening speed |  |  |  |
| Door width |  |  |  |
| Cab Dimensions |  |  |  |
| Grouping |  | Is escalator isolated, in a bank, etc. |  |
| Material Used |  | Clear material on door, on shell, etc. |  |
| Shaft Location |  | Does it pass through a shaft, does it run exposed, internal/external, etc. |  |
| Location on floor |  | Location within the floor |  |
| Access |  | Which sections of building has access to elevator? |  |
| Sign / guidance  |  | Presence / illumination levels, etc. |  |
| Floor Material |  |  |  |
| Handrail |  |  |  |
| Communication |  | Methods of communication present in cab. |  |
| Lighting |  |  |  |
|  | Emergency |  |  |
|  | Normal |  |  |
| Power |  | Location / protection |  |
|  | Emergency |  |  |
|  | Normal |  |  |
| Staffing  |  | Does it have an operator? |  |
| Access |  |  |  |
| Sign / guidance  |  | Presence / illumination levels, etc. |  |
| **Sketches / Notes:** |

**Structural Component: Escalator**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions | X |
| Availability |  | Is it working/operational/broken/being repaired/out of service? |  |
| Label  |  |  |  |
| Type |  | Scissor / enclosed , etc. |  |
| Nature  |  | Single / multiple – part of a set, etc. Grouping/ Configuration |  |
| Connecting floors |  |  |  |
| Location  |  | Internal location, external, etc. |  |
| Speed |  |  |  |
| Direction  |  |  |  |
| Angle  |  |  |  |
| Clear Width |  |  |  |
| Effective Width |  |  |  |
| Steps  |  |  |  |
|  | Length of approach | Distance from start of escalator to first step |  |
|  | Length of run-off | Distance from last step to end of escalator |  |
|  | # steps |  |  |
|  | Riser height / tread depth |  |  |
|  | Nosing  |  |  |
|  | Edge of steps |  |  |
|  | Consistency  |  |  |
|  | Condition  | Debris / damage / etc. |  |
|  | Material  |  |  |
|  | Diagonal length |  |  |
|  | Occupiable area  |  |  |
|  | End notification |  |  |
| Handrail  |  |  |  |
|  | Projection  |  |  |
|  | Material used  |  |  |
|  | Height from the step |  |  |
| Clear head room |  | Step to the bottom of stair above |  |
| Condition  |  |  |  |
| Lighting  |  |  |  |
|  | Normal  |  |  |
|  | Emergency levels |  |  |
| Access  |  |  |  |
| Sign / guidance  |  | Presence / illumination levels, etc. |  |
| **Sketches / Notes:** |

**Structural Component: Travelator**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions | X |
| Availability |  | Is it working/operational/broken/being repaired/out of service? |  |
| Label  |  |  |  |
| Type |  |  |  |
| Nature  |  | Single / multiple – part of a set, etc. Grouping/ Configuration |  |
| Connecting spaces |  |  |  |
| Location  |  | Internal location, external, etc. |  |
| Speed |  |  |  |
| Direction  |  |  |  |
|  | Consistency  |  |  |
|  | Condition  | Debris / damage / etc. |  |
|  | Material  |  |  |
|  | Length |  |  |
|  | Occupiable area  |  |  |
|  | End notification |  |  |
| Handrail  |  |  |  |
|  | Projection  |  |  |
|  | Material used  |  |  |
|  | Height from the floor |  |  |
| Clear head room |  |  |  |
| Condition  |  |  |  |
| Lighting  |  |  |  |
|  | Normal  |  |  |
|  | Emergency levels |  |  |
| Access  |  |  |  |
| Sign / guidance  |  | Presence / illumination levels, etc. |  |
| **Sketches / Notes:** |

**Structural Component: Ramp**

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Attributes | Questions | X |
| Label  |  |  |  |
| Type |  |  |  |
| Connecting floors |  |  |  |
| Location  |  | Internal location, external, etc. |  |
| Angle  |  |  |  |
| Condition  |  | Debris / damage / etc. |  |
| Material  |  |  |  |
| Diagonal length |  |  |  |
| Occupiable area  |  |  |  |
| Handrail  |  |  |  |
|  | Projection  |  |  |
|  | Material used  |  |  |
|  | Height from the step |  |  |
|  | Location |  |  |
|  | Number  |  |  |
| Clear head room |  | Step to the bottom of stair above |  |
| Condition  |  |  |  |
| Lighting  |  |  |  |
|  | Normal  |  |  |
|  | Emergency levels |  |  |
| Access  |  |  |  |
| Status |  | Is it available? |  |
| Floor covering |  | Surface conditions |  |
| Sign / guidance  |  | Presence / illumination levels, etc. |  |
| **Sketches / Notes:** |

**Appendix:** **[I,En] – Establish environmental conditions that are of interest and the acquisition activities to facilitate recording these conditions.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| Factor | Attributes  | Questions | X |
| Natural Hazard / Weather |  | Wind / Rain/ Snow/ Storm/ Earthquake/ Wildfire/ Flood/ Mudslide/ Wave, etc. |  |
| Temperature  |  |  |  |
| Radiative Flux  |  |  |  |
| Smoke  |  |  |  |
| Visibility  |  |  |  |
| Debris |  |  |  |
| Natural Lighting |  |  |  |
| Artificial Lighting |  |  |  |
| Emergency Lighting |  |  |  |
| Noise |  |  |  |
| Water  |  |  |  |
| Damage to Structure |  |  |  |
| Potential Narcotic gases |  |   |  |
|  | HCN |  |  |
|  | CO |  |  |
|  | CO2 |  |  |
|  | Low O2 |  |  |
|  | Other |  |  |
| Potential Irritant Gases |  |  |  |
|  | Acrolein |  |  |
|  | Formaldehyde |  |  |
|  | HCl |  |  |
|  | HBr |  |  |
|  | NO2 |  |  |
|  | SO2 |  |  |
|  | HF |  |  |
|  | Other |  |  |
| Potential Agents |  |  |  |
|  | Biological |  |  |
|  | Chemical |  |  |
|  | Radiological |  |  |
|  | Nuclear |  |  |
| ***OUTCOME: DETERMINE THE ENVIRONMENTAL CONDITIONS OF INTEREST THAT MIGHT INFLUENCE PERFORMANCE*****Sketches / Notes:** |

**Appendix:** **[I,Da] – Get resources and confirm extraction/acquisition/analytical plan.**

This is a list of data acquisition roles that are referred to in the following discussion. The roles are not mutually exclusive. In reality, an individual may adopt several of these roles simultaneously. Although not exhaustive, these roles represent the basic elements of a data acquisition team.

|  |
| --- |
| * *Acquisition Managers [AM]: Responsible for overseeing and planning the data acquisition*
* *Acquisition Assistants [AA]: Responsible for performing tasks identified by the AM – distributing surveys / collecting material / retrieving cameras / disseminating information, etc.*
* *Technical Assistants [TA]: Responsible for installing acquisition devices and ensuring that they are appropriately configured.*
* *Data Collectors [DC]: Responsible for operating collection devices and/or making manual observations. Survey designers, interviewers, transcribers. Participant Observers (e.g., moving with the flow of an incident, responding with a population covertly, etc.)*
* *Data Extractors [DE]: Responsible for extracting the data/information from the storage media.*
* *Data Analysts [DA]: Responsible for interrogating the data-sets.*
* *Contact Point [CP]: Member of staff in host organization that has access/influence to the implementation of the procedure and is sufficiently senior to liaise with those with overall responsibility for the event.*
* *Active Staff [AS]: Those actively involved in the implementation of the procedure. Involved in guiding the behavior of the target population. Depending on the nature of the event, these may be staff of the host organization (i.e., accessed through the CP), or may be managed by the AM (e.g., during an experiment).*
* *Safety Staff [SS]: Those responsible for ensuring that the safety of the target population is not compromised during the event. The SS may be part of host organization, your team, or third parties.*
 |

**A general list of actions that might be performed in the early stages of the data acquisition process.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| Factor | Attributes | Questions / actions  | Addressed (X) |
| ***ACTIONS*** |
| Walk Through |  |  |  |
|  |  | * Walk through space in ‘normal’ use. When not occupied, walk through according to emergency procedure.
 |  |
| Review incident / exercise reports  |  | * Review available reports on previous drills, exercises, false alarms and real incidents/events.
 |  |
| Produce acquisition documentation |  | * General instructions / script for data acquisition team.
* Produce overview of anticipated team activities for contact point within the host organization.
* Produce data collection documents – documents in which to record the data during the event.
* Produce data extraction documents – documents in which extracted data (from documentary or digital medium) can be represented in full.
 |  |
| Review procedures |  | * Use event plans and mark on them expected movement routes, observation points, potential issues, etc.
 |  |
| Establish Meeting Points |  | * Meeting points for data acquisition staff before, during and after the event
 |  |
| Identify Individual roles |  | * Identify tasks expected of all data acquisition staff
 |  |
| Derive labeling Scheme |  | * Determine labeling scheme to associate with data-sets collected (e.g., digital tapes) with locations, times, people, components, etc.
 |  |
| Acquire still shots of key locations |  | * Go through the building and record condition of structure, key components, etc.
* If performed discretely, also record locations in constant use, gathering points, flows, etc. Useful for planning and for final report.
 |  |
| Select/configure Command point |  | * Location from where data collection activities can be managed. May also be meeting point?
 |  |
| Investigate Visual Access |  | * Can the desired component/activity be seen, recorded from the planned location of the data collection resource? For instance, if a camera is to be place on a stairwell, is the field of vision sufficient to capture the data required?
 |  |
| Define Key Data Analysis/Extraction Terms |  | * Have definitions been clearly established for the data collected, such that data can be extracted by a third party?
* Do the terms clearly define the data to be collected, extracted and analyzed?
* Do they relate to the procedure employed?
* Are these definitions sufficiently clear to configure the data collection process (see previous point)?
 |  |
| Produce Event storyboard / timeline |  | * Has a clear picture of the event been established such that the data collected can easily be associated with the event as it unfolds?
 |  |
| Produce Instructions for Data Acquisition Staff  |  | * List of required actions: location, key signals,
* Maps of structure, expected movement, data collection resources, meeting points, etc
 |  |
| Determine Requirements of Recording medium |  | * Discs, tapes, drives, sheets, etc.
* Estimate maximum capacity required.
* Assume damage and loss.
 |  |
| Design/ Produce Data Acquisition Documentation |  | * Overall procedural guidance
* Collection activities / recording sheets / timelines/ templates
* Extraction instructions / note-sheets / templates
* Analysis instructions / recording sheets / templates
* Print off necessary number of documents
 |  |
| Review power supply issues |  | * Is there any equipment that needs to be charged on the day?
* What equipment needs to be charged on the night before?
 |  |
| Devise General Acquisition Plan |  | Acquisition plan – * Produce schematic/timeline/storyboard of expected procedural activity. Use to confirm data collection activities.
* Determine the best locations/situations to acquire data according to the expected procedure/response and overall objectives.
* Position Data Acquisition resources. Should be mindful of behavioral factors that might detract from procedure.
* Perform a run through – ensure that data collection resource is able to collect the desired data. Test the effectiveness of these locations/situations. For instance, stills of camera positions, a script for the interview process, etc. Get a small sample of data to be collected.
* Compile a sample of the data to be collected. Determine whether it best exploits/represents the event being conducted.
* Use sample/run-through data to inform extraction and analysis activities
 |  |
| Devise General Extraction Plan |  | * Examine overall objectives, the event procedure, the expected response, the organizational limitations, the structural/population /environmental conditions.
* Produce outline of data storage and extraction actions.
* Produce schematic of passage of data from collection resource to the analytical phase. Establish that resources in place can fulfill the passage of data. This should take into account the limitations of the storage medium, the format of the data required, the intended analytical actions and the tools required/available
 |  |
| Devise General Analysis Plan |  | * Examine overall objectives, the event procedure, the expected response, the organizational limitations, the structural/population /environmental conditions.
* Outline key variables and factors to be examined, and the relationships of interest.
* Determine techniques required to establish relationships of interest to the desired degree of accuracy/credibility/confidence.
* Produce plan to outline key analytical activities: models required, expertise required, individuals involved, outcomes needed.
 |  |
| Pre-Event Interview Design |  | Interviews to cater for upcoming event in support of other data collection activities.* Produce interview script
* Pilot script
* Train / Practice Interviewers
* Establish sample size
* Establish dedicated tools/storage required to collect / store/ examine interview data
 |  |
| Pre-Event Survey Design |  | Survey to cater for upcoming event in support of other data collection activities.* Produce survey
* Pilot survey
* Establish mode of survey delivery [postal / on site/ web-based/ etc.]
* Establish distribution / collection activities
* Estimate required sample size / number of surveys to distribute
* Establish dedicated tools/storage required to collect / store/ examine survey data
 |  |
| Observations |  |  |  |
|  | Non-Emergency Ingress |  |  |
|  | Non-Emergency Circulation |  |  |
|  | Non-Emergency Egress |  |  |
| **Sketches / Notes:** |
| ***MATERIAL RESOURCES PURCHASES***  |
| Video Cameras |  |  |  |
| Tapes / Discs / Drives |  |  |  |
| Stills Cameras |  |  |  |
| Stopwatches |  |  |  |
| RFID |  |  |  |
| Dictaphones |  |  |  |
| Microphones |  |  |  |
| Headphones |  |  |  |
| Pens / Pencils/Markers |  |  |  |
| Clipboards |  |  |  |
| Paper |  |  |  |
| Measuring tapes |  |  |  |
| Clamps / Adhesive / Velcro |  |  |  |
| Duct tape  |  |  |  |
| Torches / Flashlights |  |  |  |
| Additional batteries |  |  |  |
| Connecting plug outlets / cords |  |  |  |
| Boxes / Bags |  |  |  |
| Printed Matter |  |  |  |
| Hats / Caps |  |  |  |
| Jackets / Bibs / Vests |  |  |  |
| Laminated Cards |  |  |  |
| Communication Devices |  |  |  |
| General Tools |  |  |  |
| Whistles  |  |  |  |
| Room/Space |  | Onsite activities – configuration / preparation / interviews / survey completion |  |
| Cover story |  |  |  |
| Extraction Software/Tools |  |  |  |
| Storage Medium |  |  |  |
| Analytical Software/Tools |  |  |  |
| **Sketches / Notes:** |

|  |
| --- |
| ***HUMAN RESOURCES*** |
| Acquisition Managers [AM] |  |  |  |
|  |  | Responsible for overseeing and designing/planning the data acquisition |  |
| Acquisition Assistants [AA] |  |  |  |
|  |  | Responsible for performing tasks identified by the AM – distributing surveys / collecting material / retrieving cameras / disseminating information, etc. |  |
| Technical Assistants [TA] |  |  |  |
|  |  | Responsible for installing acquisition devices and ensuring that they are appropriately configured. |  |
| Data Collectors [DC] |  |  |  |
|  |  | Responsible for operating collection devices and/or making manual observations. |  |
|  |  | Survey designers, interviewers, transcribers. |  |
|  |  | Participant Observers (e.g., moving with the flow of an incident, responding with a population covertly, etc.) |  |
| Data Extractors [DE] |  |  |  |
|  |  | Responsible for extracting the data/information from the storage media. |  |
| Data Analysts [DA] |  |  |  |
|  |  | Responsible for interrogating the data-sets. |  |
| Safety Staff [SS] |  | Responsible for ensuring that the safety of the target population is not compromised during the event. |  |
| ***GENERAL PROCESS-**** *Examine overall objectives*
* *Determine the data required to meet these objectives*
* *Determine the best locations/situations to acquire this data*
* *Record intended data access – get an idea of the type of data that the data collection resources acquire. For instance, stills of camera positions, a script for the interview process, etc.*
* *Perform a run through – ensure that data collection resource is able to collect the desired data. For instance, position cameras and made test recording, conduct a pilot for the interview process. Achieve a picture of the expected performance of each data collection resource.*
* *Compile an estimate of the data to be collected. Produce an overview of this data to determine whether it best exploits/represents the event being conducted.*
* *Produce necessary supporting documentation*

***ACQUISITION PLAN –**** *Location of resources – marked on floor-plan*
* *Material resources required*
* *Human resources [number of AM/AA/TA/DC/DE/DA/SS] required.*
* *Target actions/events to be acquired*
* *Script/timeline associated with each resource – when it is active, manned, inactive*
* *Data acquisition documents – record sheets, instructions*
 |
| ***Sketches / Notes:*** |
| **PREPARATION *– Lists of actions are provided. These are associated with staff roles that need to be completed as part of the preparation stage of the data collection process.*** |

**Roles Required During the Preparation Data Stage**

Here is a list of data acquisition roles that are referred to in the following discussion. The roles are not mutually exclusive. In reality, an individual may adopt several of these roles simultaneously. Indeed, in many instances, resources may not be available for each role to be adopted by an individual. Although not exhaustive, these roles represent the basic elements of a data acquisition team.

|  |
| --- |
| * *Acquisition Managers [AM]: Responsible for overseeing and planning the data acquisition*
* *Acquisition Assistants [AA]: Responsible for performing tasks identified by the [AM] – distributing surveys / collecting material / retrieving cameras / disseminating information, etc.*
* *Technical Assistants [TA]: Responsible for installing acquisition devices and ensuring that they are appropriately configured.*
* *Data Collectors [DC]: Responsible for operating collection devices and/or making manual observations. Survey designers, interviewers, transcribers. Participant Observers (e.g., moving with the flow of an incident, responding with a population covertly, etc.)*
* *Data Extractors [DE]: Responsible for extracting the data/information from the storage media.*
* *Data Analysts [DA]: Responsible for interrogating the data-sets.*
* *Contact Point [CP]: Member of staff in host organization that has access/influence to the implementation of the procedure and is sufficiently senior to liaise with those with overall responsibility for the event.*
* *Active Staff [AS]: Those actively involved in the implementation of the procedure. Involved in guiding the behavior of the target population. Depending on the nature of the event, these may be staff of the host organization (i.e., accessed through the [CP]), or may be managed by the [AM] (e.g., during an experiment).*
* *Safety Staff [SS]: Those responsible for ensuring that the safety of the target population is not compromised during the event. The SS may be part of host organization, your team, or third parties.*
 |

 **Appendix:** **[P,Pr] – Actions performed on the day of the event to ensure procedure is executed**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS  |
| AM | * Ensure that [AS] have the necessary resources to conduct their activities. Ensure that they are familiar with procedure in place.
* Check for discrepancies/changes in the procedure. May require contact with [AS] and [CP] to clearly establish this.
* Establish whether other procedures currently employed (not directly related to the event) may influence the outcome.
* Establish availability of [AS] to implement procedure. Take measures to compensate, should the procedure be the responsibility of the [AM].
* Attend pre-event organization meeting, if planned. May require [AM] to liaise with [CP] for this.
* Establish ‘Go’ (that initiates the procedure) signal, ‘Abort’ signal (that indicates that the event has been abandoned or interrupted), and ‘Recall’ signal (that indicates that the event has ended). Communicate these signals to the rest of the team.
* Communicate changes to [TA] and [DC] should changes be required.
 |
| AA | * Familiarize self with procedure in place.
* Observe [AS] to gauge their activities.
* Report back to [AM] as necessary
 |
| TA | * Familiarize self with procedure in place.
* Examine technological resources.
* May have to respond to instructions to [AM], should actions be required.
* Report back technological status and issues to [AM] as necessary
 |
| DC | * Familiarize self with procedure in place.
* May have to respond to instructions to [AM], should actions be required.
 |
| DE | N/A |
| DA | N/A |
| AS | * Familiarize self with procedure in place.
* Report to [AM], if the [AM] is responsible for the active staff. Otherwise, enact the procedure according to plan.
 |
| SS | * Confirm that intended procedure is reasonable. Report back to [AM] and [CP], if need be.
 |
| General Issues | * Have [DC]/[DA]/[AA]/[TA] had prior access to procedural documentation?
* What documentation is to be available during the event?
* Do active members of staff carry reminders of expected duties?
* Is there procedural information available within the structure itself (signage, posters, etc.)?
 |
| **Sketches / Notes:** |

**Appendix:** **[P,Re] – Enable comparison on the day of the event between actual /expected response**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Receive information on potential behavioral issues; e.g., do they suspect that a specific route is not available.
* Relay to [TA] should technical resources need reallocation/adjustment.
* Relay to [DC] should their activities need modification.
 |
| AA | * Establish whether structure is being entered/accessed as expected. Are people entering the structure in an unexpected manner that might then influence the egress routes that they choose during an evacuation?
* Establish whether amenities/facilities are being used as normal just prior to event.
* Establish whether target population is engaged in the expected activities.
 |
| TA | * Respond to [AM] instructions
 |
| DC | * Report behavioral issues to [AM] that are immediately apparent – issues that might detract from the data acquisition activities.
* Respond to [AM]
 |
| DE | N/A |
| DA | N/A |
| AS | * Report issues to [AM] should they arise
* Respond to [AM] as needed
 |
| SS | * Does any unexpected behavior increase safety concerns? Report back to [AM] and [CP] if need be.
 |
| General Issues | * Ensure that the response of the target population is catered for by the data collection activities.
 |
| **Sketches / Notes:** |

**Appendix:** **[P,Or] – Ensure organization and acquisition is integrated.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Liaise with [CP] to ensure that event will proceed as planned.
* Inform [AA]/[TA]/[DC]/[AS] (if appropriate) of decision to proceed and/or any changes to the procedure.
 |
| AA | * Receive instruction from [AM]
 |
| TA | * Receive instruction from [AM]
 |
| DC | * Receive instruction from [AM]
 |
| DE | N/A |
| DA | N/A |
| AS | * Receive instruction from [AM]
 |
| SS | * Monitor impact of data acquisition activities on staff and target population. Report back to [AM] and [CP], if need be.
 |
| General Issues | * Confirm that the event is proceeding and that no high-level decisions have been made that will influence the outcome.
* Conduct meetings with principle actors who already know about the data acquisition process.
 |
| **Sketches / Notes:** |

**Appendix:** **[P,Po] – Confirm population is as expected.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Receive reports from [AA]
 |
| AA | * Establish whether current population attributes appear consistent with expectation. For instance, is the occupant population as expected on the day of the event?
* Take care not to pre-empt, prompt or influence the response of the target population.
* Inform [AM] of any serious discrepancies.
 |
| TA | N/A |
| DC | N/A |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Ensure that changes in the population (e.g., presence of small children) do not introduce new safety concerns. Report back to [AM] and [CP], if need be.
 |
| General Issues | * Determine whether the population’s distribution and attributes are as expected.
 |
| **Sketches / Notes:** |

**Appendix:** **[P,Ob] – Ensure that objectives are met by procedure.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Ensure that the current conditions, and any recent changes to the procedures, activities, and resources in place, are able to meet the objectives set previously.
 |
| AA | * Report back to [AM] any significant discrepancies from the data collection activities, response of the target population or procedure.
 |
| TA | * Report back to [AM] any significant discrepancies from the data collection activities, response of the target population or procedure.
 |
| DC | * Report back to [AM] any significant discrepancies from the data collection activities, response of the target population or procedure.
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * If there are changes to procedure, ensure that they do not adversely affect safety levels. Report back to [AM] and [CP], if need be.
 |
| General Issues | * Determine whether the stated objectives can be met by the current conditions, plan and procedure.
 |
| **Sketches / Notes:** |

**Appendix:** **[P,St] – Determine status of structure during event.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Prior to the commencement of the event, get confirmation from [AA] that the structure is appropriately configured (e.g., routes are available, doors locked/unlocked, etc.).
* Inform [DC]/[TA] of any serious discrepancies that require changes to the data collection activities.
 |
| AA | * Determine whether current building attributes appear consistent with expectation; i.e., perform a walk through. Establish how the differences may influence performance.
* Make any configurational changes to the structural components, consistent with the predetermined plan.
* Take care not to pre-empt, prompt or influence the response of the target population.
* Inform [AM] of any serious discrepancies.
 |
| TA | * Receive information from [AM].
 |
| DC | * Receive information from [AM].
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Ensure that population is able to safely make use of the structure. Report back to [AM] and [CP], if need be.
 |
| General Issues | * Outcome: Determine whether the status of the structure is suitable for the data collection activities to take place.
 |
| **Sketches / Notes:** |

**Appendix:** **[P,En] – Determine/ manage environmental conditions during event.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Prior to the commencement of the event, get confirmation from [AA]/[TA] that the environmental conditions are as expected.
* Inform [DC]/[TA] of any serious discrepancies that require changes to the data collection activities.
* Check with [SS] to ensure conditions are reasonable and safe.
 |
| AA | * If environmental conditions are to be managed, configure equipment, etc. in accordance with the pre-determined plan, to achieve the desired results.
* Determine whether current environmental conditions are consistent with expectation. Establish how the differences may influence performance.
* Take care not to pre-empt, prompt or influence the response of the target population.
* Inform [AM] of any serious discrepancies.
 |
| TA | * Receive information from [AM].
* Instructions may include resetting/reconfiguring equipment, should the environmental conditions be managed.
 |
| DC | * Receive information from [AM].
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Ensure that the environmental conditions are reasonable and do not pose an unacceptable risk. Report back to [AM] and [CP], if need be.
 |
| General Issues | * Outcome: Assess whether the environmental conditions are as expected and the necessary remedial actions.
 |
| **Sketches / Notes:** |

**Appendix:** **[P,Da] – Install/ implement acquisition tools / methods**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Ensure data acquisition plan is distributed and that everyone is familiar with it and their role in it.
* Develop commencement signal.
* Ensure that room/space is available for meetings/discussions/interviews, etc.
* Arrive at meeting point.
* Provide current data acquisition plan to staff.
* Ensure [AA]/[TA]/[DC] have resources available to complete pre-determined task.
* Ensure that [AA]/[TA]/[DC] are in the correct locations to perform their tasks.
* Communicate with [TA] to ensure that the equipment is appropriately configured.
* Provide instructions to [AA]/[DC] should actions be required.
* Perform a walkthrough of the structure and of the data collection resources to get an overview of [DC] activities.
 |
| AA | * Collect necessary documentation/resources for distribution to other staff.
* Arrive at meeting point.
* Respond to [AM] instructions
 |
| TA | * Check that necessary resources are available.
* Ensure that they are labeled correctly.
* Arrive at meeting point.
* Distribute communication devices.
* Distribute technical resources for installation.
* Ensure resources are in place, are accessible, operate according to expectation, are able to collect the necessary information, will survive the event, can be reasonably collected after the event.
* For video equipment, ensure it is functioning; charged; time synchronized; configured appropriately; can be attached to necessary fitting; can be carried by the installer/operator; can be operated by associated [DC]; ensure views/access is still reasonable; has sufficient storage media.
* Respond to [AM] instructions
 |
| DC | * Arrive at meeting point.
* Collect documentation from [AA].
* Confirm communication devices.
* Ensure that all necessary manual equipment (e.g., stopwatches, pens, clipboards, bibs, etc.) are available.
* Receive final instructions from [TA] regarding the operation of any technological resources.
* Confirm that all of the material resources are in place at their location.
* Respond to [AM] instructions
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Ensure that the practice/procedure does not compromise the safety of staff or the target population. Report back to [AM] and [CP], if need be.
 |
| General Issues | N/A |
| **Sketches / Notes:** |
| **EXECUTION *– Lists of actions are provided. These are associated with staff roles that need to be completed as part of the execution stage of the data collection process.*** |

**Roles Required During the Execution Stages**

Here is a list of data acquisition roles that are referred to in the following discussion. The roles are not mutually exclusive. In reality, an individual may adopt several of these roles simultaneously. Indeed, in many instances, resources may not be available for each role to be adopted by an individual. Although not exhaustive, these roles represent the basic elements of a data acquisition team.

|  |
| --- |
| * *Acquisition Managers [AM]: Responsible for overseeing and planning the data acquisition*
* *Acquisition Assistants [AA]: Responsible for performing tasks identified by the AM – distributing surveys / collecting material / retrieving cameras / disseminating information, etc.*
* *Technical Assistants [TA]: Responsible for installing acquisition devices and ensuring that they are appropriately configured.*
* *Data Collectors [DC]: Responsible for operating collection devices and/or making manual observations. Survey designers, interviewers, transcribers. Participant Observers (e.g., moving with the flow of an incident, responding with a population covertly, etc.)*
* *Data Extractors [DE]: Responsible for extracting the data/information from the storage media.*
* *Data Analysts [DA]: Responsible for interrogating the data-sets.*
* *Contact Point [CP]: Member of staff in host organization that has access/influence to the implementation of the procedure and is sufficiently senior to liaise with those with overall responsibility for the event.*
* *Active Staff [AS]: Those actively involved in the implementation of the procedure. Involved in guiding the behavior of the target population. Depending on the nature of the event, these may be staff of the host organization (i.e., accessed through the CP), or may be managed by the AM (e.g., during an experiment).*
* *Safety Staff [SS]: Those responsible for ensuring that the safety of the target population is not compromised during the event. The SS may be part of host organization, your team, or third parties.*
 |

**Appendix: [E,Pr]: Apply procedure of interest**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Receive reports regarding current conditions.
* Review current conditions to determine appropriateness of acquisition plan.
* Implement acquisition plan.
* Remain in contact with [CP] to receive reports on progress of event and of data collection activities.
 |
| AA | * Provide feedback to [AM] regarding current conditions.
* Remain in predetermined locations for next activity and remain in contact with [AM].
 |
| TA | * Remain with [AM] in contact with [AM] to provide technical support should the need arise.
* Remain in constant contact with [DC] staff.
 |
| DC | * Receive instructions from [AM] regarding implementation of acquisition plan.
* Engage in data collection activities.
* Remain contactable during event in case of modifications.
* Report significant issues to [AM], especially those that impact response.
 |
| DE | N/A |
| DA | N/A |
| AS | * Receive instructions from [AM] regarding implementation of acquisition plan and the commencement of the event.
* Enact procedure
 |
| SS | * Sign off on procedure.
 |
| General Issues | * Ensure that the execution of the procedure is consistent with the data collection resources in place.
 |
| **Sketches / Notes:** |

**Appendix: [E,Re]: Monitor/manage response**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Modify procedure/acquisition plan should serious discrepancies occur between the expected and actual behavioral response.
* Inform [DC]/[AA] of any changes.
 |
| AA | * Continue to observe response of population from pre-defined locations.
* Report significant discrepancies to [AM]
 |
| TA | N/A |
| DC | * Make direct observations (qualitative and quantitative). Record observations on resources provided.
* Report significant issues to [AM], especially those that impact response.
 |
| DE | N/A |
| DA | N/A |
| AS | * Manage response of target population according to procedural objectives.
* Receive instructions from [AM] regarding procedural modifications.
 |
| SS | * Monitor conditions. Report back to [AM], if need be.
 |
| General Issues | * Record the behavioral response.
 |
| **Sketches / Notes:** |

**Appendix: [E,Org]: Liaise with organization personnel**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Remain in contact with [CP].
 |
| AA | N/A |
| TA | N/A |
| DC | N/A |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Provide feedback to [AM], if need be.
 |
| General Issues | * Ensure that contact is maintained with contact points within the host organization to allow the event to proceed smoothly.
 |
| **Sketches / Notes:** |

**Appendix: [E,Po]: Observe changes in the population.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Modify procedure/acquisition plan should serious discrepancies occur between the expected and actual population attributes/distribution.
 |
| AA | * Note discrepancies/developments in the population during the event.
* Report serious discrepancies to [AM]
 |
| TA | N/A |
| DC | * Note discrepancies/developments in the population during the event.
* Report significant discrepancies to [AM], especially those that impact response.
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Monitor situation. Report back to [AM], if need be.
 |
| General Issues | * Record the status of the population during the event.
 |
| **Sketches / Notes:** |

**Appendix: [E,Ob]: Establish whether key objectives are being met.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Given the nature of the event and the information/resources available, determine whether the data collection activities should be modified to cope for any discrepancies between the objectives and the conditions present.
 |
| AA | * Record any discrepancies from the data collection activities, response of the target population or procedure.
 |
| TA | * Respond to technical discrepancies identified by [AM] between the data collected and the data desired and establish solutions.
 |
| DC | * Depending on the nature of the event, the discrepancy could be reported back to the [AM] (if there is the possibility of correcting it), or clearly record discrepancies such that they can be accurately documented.
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | N/A |
| General Issues | * Determine whether there are discrepancies between the current conditions, the data being collected and the stated objectives, and whether anything can be done about it.
 |
| **Sketches / Notes:** |

**Appendix: [E,St]: Monitor structural components**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Modify procedure/acquisition plan should serious discrepancies occur between the expected and actual structural status.
 |
| AA | * Monitor changes to the status of the structure and record.
* Report serious discrepancies to [AM]
 |
| TA | * Monitor changes to the status of the structure and record.
* Report serious discrepancies to [AM]
 |
| DC | * Monitor changes to the status of the structure and record.
* Report significant discrepancies to [AM], especially those that impact response.
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Monitor structural conditions. Report back to [AM], if need be.
 |
| General Issues | * Record the status of the structure during the event.
 |
| **Sketches / Notes:** |

**Appendix: [E,En]: Monitor changes in the environmental conditions.**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Modify procedure/acquisition plan should serious discrepancies occur between the expected and actual environmental conditions.
 |
| AA | * Monitor changes to the status of the environment and record.
* Report serious discrepancies to [AM]
 |
| TA | * Monitor changes to the status of the environment and record.
* Report serious discrepancies to [AM]
 |
| DC | * Monitor changes to the status of the environment and record.
* Report significant discrepancies to [AM], especially those that impact response.
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | * Monitor conditions. Report back to [AM], if need be.
 |
| General Issues | * Record the status of the environmental conditions during the event.
 |
| **Sketches / Notes:** |

**Appendix: [E,Da]: Acquire Data**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Receive reports on data acquisition activities
* Modify data collection activities and inform [AA] and [DC] if necessary
* Inform [TA] of technical issues should they arise.
 |
| AA | * Respond to [AM] instructions as needed
 |
| TA | * Respond to [AM] instructions as needed
 |
| DC | * Implement data collection activities according to procedure.
* Report technical issues to [AM]
* Respond to instructions from [AM]
 |
| DE | N/A |
| DA | N/A |
| AS | N/A |
| SS | N/A |
| General Issues | * Acquire the data as per the acquisition plan.
 |
| **Sketches / Notes:** |

|  |
| --- |
| **DATA EXTRACTION *– Lists of actions are provided. These are associated with staff roles that need to be completed as part of the extraction stage of the data collection process.*** |

**Roles Required During the Data Extraction Stage**

Here is a list of data acquisition roles that are referred to in the following discussion. The roles are not mutually exclusive. In reality, an individual may adopt several of these roles simultaneously. Indeed, in many instances, resources may not be available for each role to be adopted by an individual. Although not exhaustive, these roles represent the basic elements of a data acquisition team.

|  |
| --- |
| * *Acquisition Managers [AM]: Responsible for overseeing and planning the data acquisition*
* *Acquisition Assistants [AA]: Responsible for performing tasks identified by the AM – distributing surveys / collecting material / retrieving cameras / disseminating information, etc.*
* *Technical Assistants [TA]: Responsible for installing acquisition devices and ensuring that they are appropriately configured.*
* *Data Collectors [DC]: Responsible for operating collection devices and/or making manual observations. Survey designers , interviewers, transcribers. Participant Observers (e.g., moving with the flow of an incident, responding with a population covertly, etc.)*
* *Data Extractors [DE]: Responsible for extracting the data/information from the storage media.*
* *Data Analysts [DA]: Responsible for interrogating the data-sets.*
* *Contact Point [CP]: Member of staff in host organization that has access/influence to the implementation of the procedure and is sufficiently senior to liaise with those with overall responsibility for the event.*
* *Active Staff [AS]: Those actively involved in the implementation of the procedure. Involved in guiding the behavior of the target population. Depending on the nature of the event, these may be staff of the host organization (i.e., accessed through the CP), or may be managed by the AM (e.g., during an experiment).*
 |

**Appendix: [D\_E,Da] : Extract data from storage media**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Have clear script/timeline/storyboard of events/items that demarcate the extraction process.
* Provide guidance to the [DE] regarding events/attributes of interest
* Liaise between [TA] and [DE] as necessary.
* Monitor progress of [DE]. Compare with objectives.
* Assess issues of consistency between members of [DE] team.
* Take samples from [DE] team. Possibly have [DE] members work on same data sample for consistency check.
 |
| AA | N/A |
| TA | * Receive guidance from [AM]
* Provide support to [DE] as necessary
 |
| DC | N/A |
| DE | * Extract data from media per extraction plan
* Have a clear understanding of the overall objectives.
* Be familiar with the terms used to define the data being analyzed.
* Contact [AM]/[DC] for guidance on procedures employed, the procedure employed, the event and the definitions used.
* Report procedural/technical issues to [AM]
 |
| DA | * Liaise with [DE] – remain familiar with extraction procedure.
 |
| AS | N/A |
| General Issues | * [DE] should be mindful of other components of data acquisition timeline during the extraction phase.
	+ The procedure employed – the event timeline; i.e., where the extraction definitions fit into the overall plan.
	+ The overall data objectives. Are there discrepancies between the extraction terms, the data produced and the analytical objectives?
	+ The organizational limitations
	+ The behavioral response of the target population – determine whether there are discrepancies that make the extraction activities inappropriate.
	+ The structural/environmental/population conditions
	+ The data collection resources employed
	+ The data acquisition plan
 |
| General Issues | * Provide a data-set that can be analyzed in a manner consistent with the overall objectives.
 |
| **Sketches / Notes:** |
| **DATA ANALYSIS *– Lists of actions are provided. These are associated with staff roles that need to be completed as part of the analysis stage of the data collection process.*** |

**Roles Required During the Data Analysis Stage**

Here is a list of data acquisition roles that are referred to in the following discussion. The roles are not mutually exclusive. In reality, an individual may adopt several of these roles simultaneously. Indeed, in many instances, resources may not be available for each role to be adopted by an individual. Although not exhaustive, these roles represent the basic elements of a data acquisition team.

|  |
| --- |
| * *Acquisition Managers [AM]: Responsible for overseeing and planning the data acquisition*
* *Acquisition Assistants [AA]: Responsible for performing tasks identified by the AM – distributing surveys / collecting material / retrieving cameras / disseminating information, etc.*
* *Technical Assistants [TA]: Responsible for installing acquisition devices and ensuring that they are appropriately configured.*
* *Data Collectors [DC]: Responsible for operating collection devices and/or making manual observations. Survey designers, interviewers, transcribers. Participant Observers (e.g., moving with the flow of an incident, responding with a population covertly, etc.)*
* *Data Extractors [DE]: Responsible for extracting the data/information from the storage media.*
* *Data Analysts [DA]: Responsible for interrogating the data-sets.*
* *Contact Point [CP]: Member of staff in host organization that has access/influence to the implementation of the procedure and is sufficiently senior to liaise with those with overall responsibility for the event.*
* *Active Staff [AS]: Those actively involved in the implementation of the procedure. Involved in guiding the behavior of the target population. Depending on the nature of the event, these may be staff of the host organization (i.e., accessed through the CP), or may be managed by the AM (e.g., during an experiment).*
 |

**Appendix: [D\_A,Da]: Analyze Data**

|  |  |
| --- | --- |
| **Useful References** |  |
| **Example Material** |  |
| ROLE | REQUIREMENTS |
| AM | * Provide guidance to the [DA] regarding events/attributes of interest
* Liaise between [DE] and [DA] as necessary
* Receive sample of analyzed data for review.
* Modify approach as needed.
 |
| AA | N/A |
| TA | * Provide general technological guidance as requested.
 |
| DC |  |
| DE | * Receive guidance from [AM]
* Provide support to [DA] as necessary
* Respond to queries from [AM]/[DA] regarding analytical activities
 |
| DA | * Have a clear understanding of the overall objectives. Do the tools/techniques employed achieve these objectives?
* Be familiar with the terms used to define the data being analyzed. This is critical to appropriately analyze and present data.
* Have a detailed understanding of the analytical tools employed – the functionality/limitations of the tools being employed
* Contact [AM]/[DC] for guidance on procedures employed, the procedure employed and the event.
* Analyze data per analytical procedure.
 |
| AS | N/A |
| General Issues | * [DA] should be mindful of other components of data acquisition timeline during the analytical phase.
	+ The procedure employed – the event timeline
	+ The overall data objectives
	+ The organizational limitations
	+ The behavioral response of the target population
	+ The structural/environmental/population conditions
	+ The data collection resources employed
	+ The data acquisition plan
	+ The extraction plan
* Produce data in accordance with overall objectives.
 |
| **Sketches / Notes:** |

|  |
| --- |
| Appendix C: DATA TEMPLATE – LEVEL 1 DOCUMENT |

The *Data Template* is used to frame the description of each data-set. Each completed *Data Template* represents a single record within the overall *Data Portal* (forming a database of searchable records). The *Data Template* has a comprehensive list of sections enabling the user to provide information on a number of different facets of the data-set many of which are not directly related to the numerical data itself.

Each section (heading and sub-heading) is accompanied by a brief description of its purpose. Each section has placeholders for information/data to be entered. These are shown in order to indicate that information can be provided, rather than as a representative amount of space for the information to be provided. The format of the template (including the space available for each response) will undoubtedly be modified during the online implementation in order to cope with the changing nature of the information needs and on the technology available.

The template is presented in the order in which the information/data tends to appear in the original sources rather than the order in which it would be completed by the user. In the online implementation a tabbed (or similarly selective) design may be more appropriate where the user can identify the order in which the template is completed according to their needs.

Throughout the template, the user is able to insert information as required. This may be through directly inserting text, inserting figures or objects (e.g., in the sections marked with crossed circles, or as required), completing linked documents (e.g., Level 2 documents), or providing their own link resources. Where indicated, a link is provided that takes the user to associated documents (Level 2 document). (If read in PDF form, the identifying link/label in the template matches up with the heading of the Level 2 document so that it can be easily followed.)

|  |
| --- |
| **DATA TEMPLATE: Level 1 Document** |

|  |
| --- |
| ***OVERVIEW:*** *OVERVIEW OF BEHAVIORAL COMPONENTS ADDRESSED AND NATURE OF THE FINDINGS* |
| CONTENT | **PRE-CUE PHASE** | **PRE-RESPONSE PHASE** | **RESPONSE PHASE** | **POST-RESPONSE PHASE** |
| NUMERICAL |  |  |  |  |
| DESCRIPTIVE |  |  |  |  |

|  |  |
| --- | --- |
| ***A. BACKGROUND INFORMATION******–*** *OVERVIEW OF DATA SOURCE* |  |

**A-1. Reference:** *DESCRIPTION OF DATA SOURCE/SOURCE MATERIAL*

|  |
| --- |
|  |

**A-2. Organizations Involved In Data Collection:** *BACKGROUND INFORMATION ON NATURE /CREDIBILITY OF ORGANIZATIONS INVOLVED*

|  |  |  |  |
| --- | --- | --- | --- |
| **Organization** | **Name** | **Primary Function of Organization** | **Secondary Function of Organization** |
| **1** |  |  |  |
| **2** |  |  |  |
| **3** |  |  |  |

**A-3. Date of Data Collection:**  *OVERVIEW OF AGE OF DATA*

|  |  |  |
| --- | --- | --- |
| **Accuracy** | **X** | **Comment** |
| Specific Date |  |  |
| Estimated (Prior To) |  |  |
| Unknown |  |  |

**A-4. Reviewed Material Accompanying Data-Set:**  *DESCRIPTION OF SUPPORTING MATERIAL PRESENTED BY AUTHORS*

|  |
| --- |
|  |

**A-5. Original Purpose of Data Collection:**  *DESCRIPTION OF OBJECTIVES BEHIND DATA COLLECTION*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | X |  | X |  | X |  | X |
| Empirical Data |  | Model Dev./Valid./Calib. |  | Theory Dev. |  | Exam. Specific Factor |  |
| Code Development |  | Specific Application  |  | Performance Issue |  | Incident Investigation |  |
| Other |  |
| **General Description of Objective** |
|  |

|  |
| --- |
| ***B.SUMMARY INFORMATION –*** *OVERVIEW OF DATA CONTENT* |

**B-1. Factors/Variables Being Examined:**  *EXAMINATION OF INFLUENTIAL FACTORS (I.E., INDEPENDENT VARIABLES, IV) AND OUTCOMES (I.E., DEPENDENT VARIABLES, DV) RELATED TO THE DATA COLLECTION PROCESS. MAY BE NON-LINEAR, MULTI-VARIATE, ETC. MAY BE THAT MANY IV LEAD TO SINGLE DV, OR SINGLE IV LEADS TO MANY DV. THIS IS SIMPLY TO PROVIDE HIGH-LEVEL GUIDANCE ON THE FACTORS OF INTEREST.*

|  |  |
| --- | --- |
| **Independent Variables** | **Dependent Variables** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**B-2. Key Terminology Employed:** *DESCRIPTION OF THE (1) KEYWORDS STATED BY AUTHORS (I.E., IDENTIFIED IN KEY WORD SECTION OF ARTICLE); (2) SIGNIFICANT TERMS MANUALLY DERIVED FROM REVIEW OF MATERIAL; (3) PARENT TERMS ASSOCIATED WITH ANALYSIS OF (1) AND (2) USING BEHAVIORAL/ENGINEERING DICTIONARY*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Original Keywords: |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

 |
| Terms Derived From Associated Text:  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

 |
| Parent / Inserted Terms: |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

 |

|  |  |
| --- | --- |
| ***C. PROCEDURE-****DESCRIPTION OF NATURE OF EVENT AND PROCEDURE EMPLOYED TO MANAGE RESPONSE OF TARGET POPULATION* |  |

**C-1. Nature of Event:**  *DESCRIPTION OF THE EVENT FROM WHICH THE DATA WAS COLLECTED*

|  |  |  |
| --- | --- | --- |
| **Event Type** | **x** | **Details** |
| Actual Incident |  |  | *LINK* |
| Unannounced Drill |  |  | *LINK* |
| Quasi-Announced Drill |  |  | *LINK* |
| Announced Drill |  |  | *LINK* |
| Experimental Trial |  |  | *LINK* |
| Simulation |  |  | *LINK* |
| Case Study |  |  | *LINK* |
| General Circulation / Non-emergency Operation |  |  | *LINK* |
| Ingress |  |  | *LINK* |
| Other |  |  | *LINK* |
| *Description:*  | *LINK* |
| *Additional Resources: Images / Schematics / Documents/ Timeline / Storyboard* | *LINK* |

**C-2. Procedure Employed:**  *DETAILED UNDERSTANDING OF THE PROCEDURE EMPLOYED TO MANAGE THE EVENT*

|  |  |  |
| --- | --- | --- |
|  | **X** | **Details** |
| **Procedure Employed** |  |  |
|  | Type of Procedure |  | Non-Emergency/Emergency/ Experimental / Imposed / Ad hoc | *LINK* |
|  | Key Steps in Procedure |  |  | *LINK* |
|  | Routes Available to Proc. |  |  | *LINK* |
|  | Routes Lost to Proc. |  |  | *LINK* |
|  | Routes Actually Used |  |  | *LINK* |
|  | Key Locations/Areas Involved in the Procedure |  |  | *LINK* |
|  | Degree of Management |  | Managed / Unmanaged / Controlled / Uncontrolled | *LINK* |
|  | Degree of Prior Knowledge |  | Announced / Unannounced | *LINK* |
|  | Timing |  | Phased / Simultaneous | *LINK* |
|  | Involvement of Space |  | Complete / Full-Scale / Partial / Selective / Zoned | *LINK* |
|  | Unspecified / Other |  |  | *LINK* |
|  | Active Staff Responsibilities |  |  | *LINK* |
|  | Intended Target Population Activities |  |  | *LINK* |
|  | Other Procedures in Place (Operation, Security, Emergency, etc.) |  |  | *LINK* |
|  | Outside Intervention |  |  | *LINK* |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | [*LINK*](#Pro_Resp)[PR1] |

**C-3. Preparation for Procedure:**  *DESCRIPTION OF THE (PRE-EVENT) PROCEDURAL PREPARATIONS MADE PRIOR TO THE EVENT*

|  |  |  |
| --- | --- | --- |
|  | **X** | **Details** |
| **Preparation** |  |  |  |
|  | Documentation |  |  | *LINK* |
|  | Drills (Approach Adopted / #) |  |  | *LINK* |
|  | Training |  |  | *LINK* |
|  | Previous Incidents |  |  | *LINK* |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | *LINK* |

**C-4. Technological Resources Employed within Procedure:**  *DESCRIPTION OF THE EQUIPMENT USED TO ENABLE THE PROCEDURE TO BE EMPLOYED*

|  |  |  |
| --- | --- | --- |
|  | **X** | **Details** |
| **Technological Resources** |  |  |
|  | Notification System(Coverage / Audibility / Intelligibility, etc.) |  |  | *LINK* |
|  | Signage System |  |  | *LINK* |
|  | Visual System |  |  | *LINK* |
|  | Distributed Systems (Pagers, Cell, PDAs, etc.) |  |  | *LINK* |
|  | Monitoring Systems |  |  | *LINK* |
|  | Communication Systems |  |  | *LINK* |
|  | Emergency Lighting |  |  | *LINK* |
|  | Assembly Points |  |  | *LINK* |
|  | Suppression System |  |  | *LINK* |
|  | Detection System |  |  | *LINK* |
|  | Passive System |  |  | *LINK* |
|  | Fire-Fighting Equipment |  |  |  |
|  | Other |  |  | *LINK* |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | *LINK* |

**C-5. Human Resources Employed within Procedure:**  *DESCRIPTION OF STAFF REQUIRED TO FACILITATE PROCEDURE*

|  |  |  |
| --- | --- | --- |
|  | **X** | **Details** |
| **Human Resources** |  |  |
|  | Staff Levels Available |  |  | *LINK* |
|  | Staff Training |  |  | *LINK* |
|  | Staff Experience |  |  | *LINK* |
|  | Staff Activities |  |  | *LINK* |
|  | Staff Roles/Hierarchy / Structure |  |  | *LINK* |
|  | Staff Distribution |  |  | *LINK* |
|  | Emergency Responders |  |  | *LINK* |
|  |  |  |  |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | *LINK* |

|  |  |
| --- | --- |
| ***D.STRUCTURE –*** *THE PHYSICAL SPACE IN WHICH THE EVENT TOOK PLACE* |  |

**D-1. Structure/Space Characteristics:** *DETAILED INFORMATION ON PHYSICAL SPACE IN WHICH THE EVENT TOOK PLACE*

|  |  |  |
| --- | --- | --- |
|  | **X** | **Details** |
| Name |  |  | *LINK* |
| Address / Location |  |  | *LINK* |
| Age of Structure |  |  | *LINK* |
| Surrounding Areas / Buildings |  |  | *LINK* |
| Type of structure / Occupancy Type |  |  | *LINK* |
| Dimensions (Height / Footprint / Area) |  |  | *LINK* |
| Fire History |  |  | *LINK* |
| Construction History |  |  | *LINK* |
| Exercise/Experiment/Drill History |  |  | *LINK* |
| No. of Rooms / Floor |  |  | *LINK* |
| No. of Floors |  |  | *LINK* |
| No./Config. of Stairwells |  |  | *LINK* |
| No./Config. of Elevators |  |  | *LINK* |
| No./Config.. of Escalators |  |  | *LINK* |
| No./Config. of Ramps |  |  | *LINK* |
| No./Config. of Travelators |  |  | *LINK* |
| No./Config. of Tunnels |  |  | *LINK* |
| No./Config. of Exits |  |  | *LINK* |
| General Floor Layout (Internal Separation / Exit Visibility / Configuration) |  |  | *LINK* |
| Perimeter Access ( Ext.Exits / Security / Main Exits / Access Management) |  |  | *LINK* |
| Notification Equip. (Audio) |  |  | *LINK* |
| Notification Equip. (Visual) |  |  | *LINK* |
| Suppression System |  |  | *LINK* |
| Detection System |  |  | *LINK* |
| Guidance Equip. |  |  | *LINK* |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | [*LINK*](#Struc_Det)[SD1] |

|  |  |
| --- | --- |
| ***E.POPULATION –*** *DESCRIPTION OF THE TARGET POPULATION SUBJECT TO THE PROCEDURE* |  |

**E-1 Population Characteristics** *INFORMATION ON TARGET POPULATION; I.E., THOSE SUBJECT TO THE PROCEDURE*

|  |  |  |
| --- | --- | --- |
|  | **X** | **Details** |
|  |  |  |
| **Situation** |  |  |
|  | Size |  |  | *LINK* |
|  | Distribution/Location |  |  | *LINK* |
|  | Activities |  |  | *LINK* |
|  | State/Alertness |  |  | *LINK* |
|  | Commitment to activities |  |  | *LINK* |
|  | Engagement / Focus |  |  | *LINK* |
| **Relationship to Structure** |  |  |
|  | Time spent in structure |  |  | *LINK* |
|  | Participants |  |  | *LINK* |
|  | Residents |  |  | *LINK* |
|  | Occupants |  |  | *LINK* |
|  | Transient |  |  | *LINK* |
| **Attributes** |  |  |
|  | Gender Info |  |  | *LINK* |
|  | Age Info |  |  | *LINK* |
|  | Initial Location / Distribution |  |  | *LINK* |
|  | Height |  |  | *LINK* |
|  | Weight |  |  | *LINK* |
| **Impairments / Impediments** |  |  |  |
|  | Visual Impairments |  |  | *LINK* |
|  | Aural Impairments |  |  | *LINK* |
|  | Cognitive Impairments |  |  | *LINK* |
|  | Existing Health Issues (Obesity, Pregnancy, etc.) |  |  | *LINK* |
|  | Incident-Related Health Issues |  |  | *LINK* |
|  | Incident-Related Health Fatalities |  |  | *LINK* |
|  | Fitness / Fatigue |  |  | *LINK* |
|  | Encumbrance |  |  | *LINK* |
| **Familiarity** |  |  |  |
|  | Key ingress points |  |  | *LINK* |
|  | Key internal facilities |  |  | *LINK* |
|  | Key egress points |  |  | *LINK* |
|  | Routine Use of Space |  |  | *LINK* |
|  | Access Restrictions |  |  | *LINK* |
| **Social/Cultural Attributes** |  |  |
|  | Nature of social/role structure |  |  | *LINK* |
|  | Description of groups |  | *[Social / Familial / Employment / Unfamiliar, etc.]* | *LINK* |
|  | Size of social groups |  |  | *LINK* |
|  | Native Language |  |  | *LINK* |
|  | Education Level |  |  | *LINK* |
|  | Cultural Issues |  | *[E.g., familiarity with safety / security culture, etc.]* |  |
| **Experience** |  |  |
|  | Prior Training |  |  | *LINK* |
|  | Experience with Drills |  |  | *LINK* |
|  | Experience with Prior Incidents |  |  | *LINK* |
|  | Familiarity with Structure |  |  | *LINK* |
|  | Time spent in structure |  |  | *LINK* |
|  | Procedural Responsibilities |  |  | *LINK* |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | *LINK* |

|  |  |
| --- | --- |
| ***F.ENVIRONMENTAL CONDITIONS –*** *ENVIRONMENTAL CONDITIONS IN WHICH THE EVENT TOOK PLACE* |  |

**F-1. Environmental Conditions:**  *INFORMATION ON THE ENVIRONMENT IN WHICH THE EVENT TOOK PLACE*

|  |  |  |
| --- | --- | --- |
|  |  | **Details** |
| Internal |  | X |  | *LINK* |
|  | Temperature |  |  | *LINK* |
|  | Radiative Flux |  |  | *LINK* |
|  | Smoke |  |  | *LINK* |
|  | Visibility |  |  | *LINK* |
|  | Debris |  |  | *LINK* |
|  | Lighting (Ambient / Emerg.) |  |  | *LINK* |
|  | Noise |  |  | *LINK* |
|  | Water |  |  | *LINK* |
|  | Damage to Structure |  |  | *LINK* |
|  | Narcotic Gas: HCN |  |  | *LINK* |
|  | Narcotic Gas: CO |  |  | *LINK* |
|  | Narcotic Gas: CO2 |  |  | *LINK* |
|  | Narcotic Gas: Low O2 |  |  | *LINK* |
|  | Narcotic Gas: Other |  |  | *LINK* |
|  | Irritant Gas: Acrolein |  |  | *LINK* |
|  | Irritant Gas: Formaldehyde |  |  | *LINK* |
|  | Irritant Gas: HCl |  |  | *LINK* |
|  | Irritant Gas: HBr |  |  | *LINK* |
|  | Irritant Gas: NO2 |  |  | *LINK* |
|  | Irritant Gas: SO2 |  |  | *LINK* |
|  | Irritant Gas: HF |  |  | *LINK* |
|  | Irritant Gas: Other |  |  | *LINK* |
|  | CBRN: Chemical |  |  | *LINK* |
|  | CBRN: Biological |  |  | *LINK* |
|  | CBRN: Radiological |  |  | *LINK* |
|  | CBRN: Nuclear |  |  | *LINK* |
| External |  |  |  | *LINK* |
|  | Weather |  |  | *LINK* |
| Other |  |  |  | *LINK* |
| *Description* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | [*LINK*](#Env_Con)[EC1] |

|  |  |
| --- | --- |
| ***G. DATA PROCESSING –*** *DESCRIPTION OF THE COLLECTION, EXTRACTION AND ANALYSIS PROCESSES AND THE RESOURCES INVOLVED* |  |

**G-1. Data Collection Methods:**  *INFORMATION ON THE DATA COLLECTION TECHNIQUES EMPLOYED*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Technique** | **X** | **Resources Employed** | **Data Collected** | **Assumed Degree of Accuracy** |
| Manual Observation |  |  |  |  | *LINK* |
| Video Cameras Introduced |  |  |  |  | *LINK* |
| Still Photograph |  |  |  |  | *LINK* |
| CCTV |  |  |  |  | *LINK* |
| Sensors |  |  |  |  | *LINK* |
| Survey |  |  |  |  | *LINK* |
| Interviews |  |  |  |  | *LINK* |
| Participant Observation |  |  |  |  | *LINK* |
| Simulation |  |  |  |  | *LINK* |
| Secondary Material (Reviewed) |  |  |  |  | *LINK* |
| Other |  |  |  |  | *LINK* |
| *Description:* | *LINK* |
| *Additional Resources: Images / Schematics / Timeline / Storyboard* | [*LINK*](#DC_Res)[DCR1] |

**G-2. Methods/Tools Used to Extract Data***: DESCRIPTION OF EXTRACTION/SAMPLING TECHNIQUES EMPLOYED*

|  |  |
| --- | --- |
|  | *LINK* |

**G-3. Methods/Tools Used to Analyze Data:** *DESCRIPTION OF THE DATA ANALYSIS TECHNIQUES EMPLOYED*

|  |  |
| --- | --- |
|  | *LINK* |

**G-4. Description of Data Presented:**  *DESCRIPTION OF THE DATA-SET FORMAT AND CONTENT*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PerformanceComponent Represented*[Behavioral response, population, procedural, environmental, organizational, structural**component, etc.]* | # of observ. / data-points | Nature*[ e.g., whether the data presented are quantitative, quantitative, etc.]* | Scope*[factors that are addressed in the observations]* | Refinement*[e.g., whether the data are at the individual level, a section of the population, entire population, etc]* | Format*[ e.g., raw data points, curves, average, range, etc.]* | Unit*[m,m/s, p/m2, etc]* |
|  |  |  |  |  |  |  | *LINK* |
|  |  |  |  |  |  |  | *LINK* |
|  |  |  |  |  |  |  | *LINK* |
|  |  |  |  |  |  |  | *LINK* |

|  |  |
| --- | --- |
| *Description:*  | *LINK* |
| *Additional Resources: Images / Schematics / Documents* | *LINK* |

|  |  |
| --- | --- |
| ***H. EVENT TIMELINE:*** *DESCRIPTION OF EVENT EVOLUTION* |  |

**H-1. Timeline Notation:** *DESCRIPTION OF THE EVENT TIMELINES OF THE VARIOUS EVENT COMPONENTS ALLOWING DIRECT COMPARISON*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supporting Images |  | Event/Incident Timeline | Intended Event Procedure | Act. Proc. Events / Response | Population Status | Structural Status | Environ. Status | Data Activities |  | Supporting Images |
|  |  | Pre-Event | ***t-1*** |  |  |  |  |  |  |  |  |
|  |  | Pre-Cue (Initial Conditions) | ***t0*** |  |  |  |  |  |  |  |  |
|  |  | Pre-Response | ***t1*** |  |  |  |  |  |  |  |  |
|  |  | Response | ***t2*** |  |  |  |  |  |  |  |  |
|  |  | End | ***t3*** |  |  |  |  |  |  |  |  |
|  |  | Post-Response | ***t4*** |  |  |  |  |  |  |  |  |
|  |  | Post-Event | ***t5*** |  |  |  |  |  |  |  |  |
|  |  |  |  | [*LINK*](#IntProc) [IP1] | [*LINK*](#ActProc)[AP1] | [*LINK*](#StrucStat)[SS1] | [*LINK*](#EnvStat)[ES1] | [*LINK*](#PopStat)[PS1] | [*LINK*](#DAct)[DA1] |  |  |
| Description: | *LINK* |
| Additional Resources: Images / Schematics / Timeline / Storyboard | *LINK* |

|  |  |
| --- | --- |
| ***I. RESULTS –*** *DATA COLLECTED* |  |

**I-1. Reported Results:**  *DETAILS OF THE NUMERICAL/DESCRIPTIVE RESULTS REPORTED*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Tabular Representation | Graphical Representation | Animated Representation | Narrative Representation |
| Raw data |  | *LINK* |  | *LINK* |  | *LINK* |  | *LINK* |
| Compiled data |  | *LINK* |  | *LINK* |  | *LINK* |  | *LINK* |
| Extrapolated data |  | *LINK* |  | *LINK* |  | *LINK* |  | *LINK* |
| Simulated Data |  | *LINK* |  | *LINK* |  | *LINK* |  | *LINK* |
| Reported Data |  | *LINK* |  | *LINK* |  | *LINK* |  | *LINK* |
| Detailed Description: | *LINK* |
| Other Forms of Data Representation: | *LINK* |
| Additional Resources (Timelines, Storyboards, Photographs, Commentary Recordings, Related Material, etc.) | *LINK* |

**I-2. Quotations from Text:** *KEY COMMENTS FROM THE ORIGINAL AUTHORS/DATA COLLECTORS*

|  |  |
| --- | --- |
|  | *LINK* |

**I-3. Conclusions Drawn:** *KEY CONCLUSIONS DRAWN BY THE ORIGINAL AUTHORS/DATA COLLECTORS*

|  |  |
| --- | --- |
|  | *LINK* |

**I-4. Theory Development (i.e., major findings):** *SUMMARY OF KEY RELATIONSHIPS BETWEEN THE VARIABLES IDENTIFIED AND THE STRENGTH OF THESE RELATIONSHIPS (E.G., ANDECDOTAL, STATISTICAL, ETC.)*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Modifier | IV | Relationship | Modifier | DV | Strength | Miscellaneous | [*LINK*](#Notation) [TD1] |
|  |  |  |  |  |  |  | *LINK* |
|  |  |  |  |  |  |  | *LINK* |
|  |  |  |  |  |  |  | *LINK* |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

|  |
| --- |
| **DATA TEMPLATE: Level 2 Documents** |

|  |
| --- |
| **PR1: Documents Relating to the Procedural Response** |
|  |
| Description: Event Procedures / Experimental Procedure / Schematics |

|  |
| --- |
| **SD1:Structural Details** |
|  |
| Description: Schematic / Architectural Diagrams / Photographic Evidence |

|  |
| --- |
| **EC1:Environmental Conditions** |
|  |
| Description: Schematic / Architectural Diagrams / Photographic Evidence |

|  |
| --- |
| **DCR1:Data Collection Resources** |
|  |
| Description: Information on data collection resource locations / specification / catchment areas / management |

|  |  |
| --- | --- |
|  | **IP1:Intended Event Procedure** |
| **Pre-Event** |  |  |  |
| Description (*t-11)* | Description (*t-12)* | Description (*t-13)* |
| **Pre-Cue** **(Initial Conditions)** |  |  |  |
| Description (*t01)* | Description (*t02)* | Initial Conditions (*t03)* |
| **Pre-Response** |  |  |  |
| Description (*t11)* | Description (*t12)* | Description (*t13)* |
| **Response** |  |  |  |
| Description (*t21)* | Description (*t22)* | Description (*t23)* |
| **End Conditions** |  |  |  |
| Description (*t31)* | Description (*t32)* | Description (*t33)* |
| **Post-Response** |  |  |  |
| Description (*t41)* | Description (*t42)* | Description (*t43)* |
| **Post-Event** |  |  |  |
| Description (*t51)* | Description (*t52)* | Description (*t53)* |
| [*RETURN TO MAIN DOCUMENT*](#TempleHome) |

|  |  |
| --- | --- |
|  |  **AP1: Actual Procedural Events / Response** |
| **Pre-Event** |  |  |  |
| Description (*t-11)* | Description (*t-12)* | Description (*t-13)* |
| **Pre-Cue** **(Initial Conditions)** |  |  |  |
| Description (*t01)* | Description (*t02)* | Initial Conditions (*t03)* |
| **Pre-Response** |  |  |  |
| Description (*t11)* | Description (*t12)* | Description (*t13)* |
| **Response** |  |  |  |
| Description (*t21)* | Description (*t22)* | Description (*t23)* |
| **End Conditions** |  |  |  |
| Description (*t31)* | Description (*t32)* | Description (*t33)* |
| **Post-Response** |  |  |  |
| Description (*t41)* | Description (*t42)* | Description (*t43)* |
| **Post-Event** |  |  |  |
| Description (*t51)* | Description (*t52)* | Description (*t53)* |
| [*RETURN TO MAIN DOCUMENT*](#TempleHome) |

|  |  |
| --- | --- |
|  | **SS1:Structural Status** |
| **Pre-Event** |  |  |  |
| Description (*t-11)* | Description (*t-12)* | Description (*t-13)* |
| **Pre-Cue** **(Initial Conditions)** |  |  |  |
| Description (*t01)* | Description (*t02)* | Initial Conditions (*t03)* |
| **Pre-Response** |  |  |  |
| Description (*t11)* | Description (*t12)* | Description (*t13)* |
| **Response** |  |  |  |
| Description (*t21)* | Description (*t22)* | Description (*t23)* |
| **End Conditions** |  |  |  |
| Description (*t31)* | Description (*t32)* | Description (*t33)* |
| **Post-Response** |  |  |  |
| Description (*t41)* | Description (*t42)* | Description (*t43)* |
| **Post-Event** |  |  |  |
| Description (*t51)* | Description (*t52)* | Description (*t53)* |
| [*RETURN TO MAIN DOCUMENT*](#TempleHome) |
|  | **ES1:Environmental Status**   |
| **Pre-Event** |  |  |  |
| Description (*t-11)* | Description (*t-12)* | Description (*t-13)* |
| **Pre-Cue** **(Initial Conditions)** |  |  |  |
| Description (*t01)* | Description (*t02)* | Initial Conditions (*t03)* |
| **Pre-Response** |  |  |  |
| Description (*t11)* | Description (*t12)* | Description (*t13)* |
| **Response** |  |  |  |
| Description (*t21)* | Description (*t22)* | Description (*t23)* |
| **End Conditions** |  |  |  |
| Description (*t31)* | Description (*t32)* | Description (*t33)* |
| **Post-Response** |  |  |  |
| Description (*t41)* | Description (*t42)* | Description (*t43)* |
| **Post-Event** |  |  |  |
| Description (*t51)* | Description (*t52)* | Description (*t53)* |
| [*RETURN TO MAIN DOCUMENT*](#TempleHome) |
|  | **PS1:Population Status** |
| **Pre-Event** |  |  |  |
| Description (*t-11)* | Description (*t-12)* | Description (*t-13)* |
| **Pre-Cue** **(Initial Conditions)** |  |  |  |
| Description (*t01)* | Description (*t02)* | Initial Conditions (*t03)* |
| **Pre-Response** |  |  |  |
| Description (*t11)* | Description (*t12)* | Description (*t13)* |
| **Response** |  |  |  |
| Description (*t21)* | Description (*t22)* | Description (*t23)* |
| **End Conditions** |  |  |  |
| Description (*t31)* | Description (*t32)* | Description (*t33)* |
| **Post-Response** |  |  |  |
| Description (*t41)* | Description (*t42)* | Description (*t43)* |
| **Post-Event** |  |  |  |
| Description (*t51)* | Description (*t52)* | Description (*t53)* |
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|  |  |
| --- | --- |
|  | **DA1: Data Activities** |
| **Pre-Event** |  |  |  |
| Description (*t-11)* | Description (*t-12)* | Description (*t-13)* |
| **Pre-Cue** **(Initial Conditions)** |  |  |  |
| Description (*t01)* | Description (*t02)* | Initial Conditions (*t03)* |
| **Pre-Response** |  |  |  |
| Description (*t11)* | Description (*t12)* | Description (*t13)* |
| **Response** |  |  |  |
| Description (*t21)* | Description (*t22)* | Description (*t23)* |
| **End Conditions** |  |  |  |
| Description (*t31)* | Description (*t32)* | Description (*t33)* |
| **Post-Response** |  |  |  |
| Description (*t41)* | Description (*t42)* | Description (*t43)* |
| **Post-Event** |  |  |  |
| Description (*t51)* | Description (*t52)* | Description (*t53)* |
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**TD1: Basic Notation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Modifier | IV | Relationship | Modifier | DV | Strength | Miscellaneous |
|  | [TERM] |  |  | [TERM] |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
|  |  | Example |
| ©,  | Is correlated with /proportional to | Walking Speed (flat) © Walking Speed(stair) |
| AND (^) | OR(V) |  |  |
| ≈ | Is approximately equal to | Movement rates in airports ≈ Movement rates in other transport terminals |
| ≡ | Is equivalent to | Pre-Movement time ≡ Pre-Evacuation time ≡ Pre-Response time |
| ≤ ≥ < > | Greater/less than | Stair (up) speed < Stair (down) speed |
| ↑↓ | Impact on variable – increase / decrease | ↑Pre-Evacuation times |
| ⇒ | Leads to/implies | ↓Information ⇒ ↑Pre-Response timesPlaced in Relationship or Miscellaneous |
| = | Is equal to | Max(ρ) = 0.92 m2/m2 |
| MAX|AVG|MIN | Maximum | Average | Minimum | Max(ρ) = 0.92 m2/m2Avg(ρ) = 0.45 m2/m2Min(ρ) = 0.22 m2/m2 |
|  | There exists |  ρ > 0.9 m2/m2 |
|  | Therefore | Placed in Relationship or Miscellaneous columns  |
|  | Because  | Placed in Relationship or Miscellaneous columns |
| ↙ | Connected to next line | Placed in Miscellaneous column to connect adjoining lines |

|  |
| --- |
| Appendix D: KEYWORD EQUIVALENCE CLASSES |

This appendix represents a categorization of vocabulary into broadly related sets of terms. This was completed to simplify the development of the keyword search facility in the template. Terms in bold are suggested keywords (i.e., words to be inserted into the template). Terms underlined are tentatively suggested as keywords. Terms on the same line as each other have a similar meaning (i.e. equivalent terms) or address a related subject. Terms indented and below another term (i.e., child terms) are attributes, adjectives, components, members or terms related to the parent term. Parent terms are left justified; child terms are then indented into the page. Depending on the term, child and parent terms may be included as keywords. For instance, the term ‘loading’ is equivalent to [Size], which has the parent term [Population]. Therefore, both [Population] and [Size] would inserted into the results of a keyword search.

To cope with the range of terms that may be provided to the portal, the following list would have to be expanded to address the different tenses, forms and uses of the terms employed in the field.

|  |
| --- |
| POPULATION  |
| **[Population]/** [crowd/ group/collective/mass/herd/mob/aggressive mob/casual crowd/audience/gathering/cluster/herd/ community/collective/alliance/flock/people] **[size]/** [Population numbers / Number / Loading] **[distribution]** **/** [location/ initial location/Initial distribution/clustered/grouped/even] **[nature]**[Handicapped population / Able-bodied population / Gender distribution / Homogeneous / Heterogeneous / Age distribution / Impaired / with Impairments /diverse/uniform/equal/similar /different/ casual/ cohesive/ expressive/ aggressive/competitive/cooperative] **[Group]**Group [**Size]** Group [**Distribution**]Actions of surrounding population can act as Event-Specific External Cues upon the Decision-Making process. |

|  |
| --- |
| INDIVIDUAL –component of a population or a group |
| **[Individual]/ [**Passenger / Pax / Agent / Pedestrian / Occupant / Person / Patrons / Residents / Building Occupants / Confederates / Significant Others / Participants / Volunteers / Associates / Helpers / Avatar/ Spectator / Automaton/ Steward / Marshal / Fire Marshal/ Fire Fighter/ Responder/ Helper/Guards / Carer/Leader/ Responders / Movers / Walkers /Crawlers / Runners]Individual **[**Characteristics**]/** [occupant characteristics / person characteristics / person attributes/ occupant limitations/ individual capabilities/traits]*PRE-EVENT:* *PHYSICAL ATTRIBUTES***[Physical Attributes]** / **[**Physical Capabilities / Physical Factors/ Physical Condition] [Demographic-[**Age]** /Children/ Elderly/Adult/Youth/Child/Adolescent**]** **[Gender**]/[Sex] [PhysicalCondition/Constitution/Health/ Status/Well-Being/Vigor/Condition/Existing Health Issues][**Height] [Weight]/[**Stature /Bulk/Depth / Body Plan / Individual Footprint/ Pedestrian Area/ Projection/Dimensions/ Shoulder Width / Body Ellipse][Horizontal Walking [**Speed]** / Free Speed / Desired Speed /[**Horizontal]** Speed /Stair Ascent / Stair Descent/Stair Descent Device / Vertical Walking Speed / Inclined Walking Speed / Individual Velocity/ Walking Velocity /Acceleration / Jogging Speed / Locomotion Speed/[**Ascending]** Speed / [**Descending]** Speed / Free-Flow Walking Speed][Gait/Stride / Step Length][Vulnerabilities / Limitations / Weaknesses / Strengths / Abilities / Capabilities / Issues / **[Impairments] /[**Susceptibility]/**[Sensory] [Visual]**Ly Impaired/ [Blind/Color Blindness/Myopia/Partial Sighted/ Vision / Vision Impairment/Visual Field] [**Hearing]** Impaired - Deaf/Hearing Loss/Hearing Limited] [**Mobility]** (Impaired)/ Disabled / Slow Movement/ Encumbered/ Fitness /Mobility Limitations / Handicap/ Mobility Level /Lame/ Mobility Aid/ Wheelchair / Frame /Walking Stick/Crutches/Walking Aid][**Fatigue]**/ Tiredness/Health Issues / Pregnancy / Encumbrance / Clothing /Physical Disability/ Able/ Obesity]*PRE-EVENT: COGNITIVE ATTRIBUTES* [Cognitive Attributes]**/** [Cognitive Factors / Cognitive Capabilities] [Mentally Impaired/Slow / Backward/ Retarded] / **[**Cognitively Impaired]/ [Cognitive Impairment][Intelligence / IQ] / [Cognitive Skills]/ [Education/Memory/Recollection/Spatial Awareness/Cognitive Mapping/Orientation/Ignorance][Language/Skills / Native Language/Comprehensive / Mother Tongue][Patience/Impatience/ Drive / Motivation / Energy/Impetus/Urgency/Aggression]*PRE-EVENT: EXPERIENCES*[Experience]/[**Familiarity**]/[Use]/[**Training]**/[Expertise]/[Habituation/Memories/Recall][**Role]**/[Status/Responsibility/ Social Affiliation/ Status/Seniority/Authority/Cultural Factors/Social Affinity /Social Factors/Identity /Culture/Association/Belonging]/[Social Attributes]/[Cultural Attributes][Organizational Characteristics] / [Hierarchy/Organization/Social Structure/Social Network/Social Affiliation/Social Position/Job Title/Occupant Groups/Social Groups/Role Structure/Power Structure/Cultural Context/Seniority/Junior/Power/ Influence/Command/Dominance/Role Structure/Organizational Hierarchy/Management/Staff/ Employer/Employee/Credibility/Authority/Responsibility/ Jurisdiction/ Control/Work Environment/Social Environment/Familial Setting/Domestic/Social Setting/Social Environment/Public /Private/Formal/Informal/ Residential/Resident/Transient/Frequent Visitor/Managed/Supervised/ Unsupervised/ Related/ Connected/Friends/Acquaintances/ Socially Significant/Strangers/Unfamiliar/ Distant/ Neighbors/ Associates/ Colleagues/ Relation (Father, Mother, Daughter, Son)/ Extended Family / Nuclear Family] *EVENT SPECIFIC SITUATIONAL FACTORS* [Active / Passive/Involved/Uninvolved][**State]** / [Alertness/Status/ Mental Alertness/Asleep/Tired/Unconscious/Awake]/ [Intoxication]/[Drunkenness/Alcohol Impairment/Sensory Access] [Posture/Stance/Upright/Crawling][**Location]**/[Position/Situation/][Proximity To Others/Surrounding Population/Alone/Isolated/In-A-Group/Associated][Actions/[**Activity]**/Current Activities/Current Actions][Attention/ Attraction /(Level Of)[**Engagement]**/ [Interest/ Concentration/ Focus/ Distraction/ Level Of Investment In Activity][Awareness/Alertness/Attentiveness][**Commitment]**/[Reluctance To Leave/Reluctance To Disengage][Dress/Footwear / Clothing / Encumbrance / Shoes / Spectacles / Glasses/Visual Aids/Outfit/Baggage/Luggage][Comfort / Discomfort][Exposure Induced Impairments]/[Injury / Casualty / [**Fatality]/** Heat Stress / FED/ Death/Trauma/Exposure/Temperature Exposure/Hyperthermia/Hypothermia] *EVENT SPECIFIC EXPERIENCES* [DECISION-MAKING PROCESS]/[Individual Decision Process/RRI/BDI (Belief-Desire-Intention)/PIA][Stress Psychological Stress/ Anxiety/Time Pressure/Time Constraints/Tunnel Vision/Focus]Disorientation /Orientation][**Perception**]/[Self-Perception/Threat Perception / Perception Of Threat/Ambiguous Information/Perceptual Capacity/Cue Attenuation/Information Landscape/Exposure/Self-Aware/Threat Perception]**[Cue] /**[ Cue Credibility/Applicability/Ownership/Visual / Verbal Cues/Social Perception /Social Response/Physical Perception/ Rumors /Signal /Peer Influence / Peer Pressure/ Observable Occupant Actions/Social Awareness /Observed Cue/ Physical Cue/Social Cue/Ambiguous Cue/Fire Cue/ Identify/ Perceive/External Cue/Internal Cue/Sound/Crackle/Burning/ Unfamiliar(Noise/Sound/Smell/Feeling/Sensation)]**[Interpretation]/**[Understanding/Integration/Cue Assessment / [Situation Awareness**]** / Recognition / Awareness /Deliberation/Situational Awareness]**[Analysis] /** [Bounded Rationality/Evaluate/ Validate/ Commitment/ Reassessment/Information Processing/Problem-Solving/(Internal/Mental)Simulation / Estimation/Optimizing/Satisficing /Feedback/ Reasonable/Rational / Response Selection/ Action Selection/Act/Action Refinement/Processing/Solving/Creating/ Responding/Verification]**[Response]** [Behavioral Response/Person Flight/Hysteria / Antisocial Behavior / Mass Hysteria / Collective Behavior / Negative Panic/ Panic / Evacuation Inertia / Panic/Craze/Flight/Negative Panic/Irrational/Competitive/Selfish/Amoral/Non-Responsive/Inaction/ Fight/Flight /Flight Response][Deference/Altruistic Behavior/Non-Competitive / Cooperative/Altruism /Route Choice/ Unsocial Behavior/Panic Flight/Qualitative / Quantitative Decisions]*Response: Action Related*The high-level ‘placeholder’ terms presented at the head of the following action descriptions represent the associated actions, removed from the context of the action itself; i.e., in a general form. Therefore, the high-level terms should be able represent the set of related actions with the appropriate changes to the object/subject and a more specific, but related, verb.**([Assess] |[Commence]|[End]| [Modify]|[Maintain]) [Action]**[Movement/ Misstep/Overstep/Understep / Slip / Fall / Trip /Stumble]/ [Rush / Hurry / Motivated Movement/Run/Sprint]/[ Follow Other / Follow Leader / Go For Help / Investigate Fire / Involuntary Action/ Wait / Wait For Help / Escape / Leave Area /Evacuate Self / Self Evacuate / Seek Refuge / Wait /Control Situation / Move /Escape/ Traverse / Travel / Movement Through Smoke / Notifying Others / Beginning To Evacuate / Continuing/ Relocating]/[Shuffle/Push /Sway / Shuffle / Body Sway/Forward/Lateral Direction /Forward/Lateral Movement /Jostle] / [Bypassing / Overtaking/ Action Choice/ Assist]/ Local Navigation / Non-Egress Activities/Normative Actions/Panic Behavior/Human Response]([**Modify]|[Maintain])[Objective]**[Exit Change / Redirection /Adapt / Direction Of Movement / Trajectory / Direction / Angle/ Desired Direction / Target / Direction/ Destination/Bearing/Goal Change/Lose Task/Maintain Task /Path Adopted/ Path Choice/ Path Selection /Travel Path / Travel Route / Route Choice/ Expectation / Goal/ Objectives / Goals / Targets/Referents/Intentional ]/ [Purposeful/Purposive/Convention / Norms / Mores/Convenience/Normalcy Bias]*Response: Information Related***([Emit] | [Receive] | [Update] | [Process] | [Interpret] | [Seek ]) [Information]**[Call For Help/ Seek / Seek Others /Investigate / Communicate /Search/Warn / Ignore / Reaction / Seeking Additional Information /Searching For Others /Wayfind / Communication/ Route Navigation / Wayfinding / Route Selection/Exit Choice / Exit Choice Decision]*Response: Social Interaction***([Give]|[ Receive]) [Aid]/[Aid Self]**[Provide Assistance / Help Others/Lift Person/Lift Patient/Support/Tend/Carry/Push/Force/ Assist/Lift/Fireman’s Lift]*Response: Object Related* **([Collect] | [ Deposit] | [Use]) [Object]**[Mitigate Fire / Collect Items /Fight Fire /Operate Extinguisher/Carry/Pick Up/Smash/Drop/ Throw/Spray/Lock/Unlock/Don/Discard/Jam] |

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| STRUCTURE |
| The structure is categorized as a *Pre-Event External Factor* for the individual; i.e., it existed prior to the event.**[Structure]** / [Building / Construct ][Structural Characteristics]/[Building Characteristics / Architectural Characteristics/ Building Design / Floor Layout/ Age/Construction Date/Modifications/Fire History/Surrounding Areas/Construction/Exit Configuration/Exit Access/Perimeter Access/Security Levels/Security Access/Restricted Areas/Access Management]**[**Configuration] /[Geometry / Architecture / Complexity /Building Layout /Visual Access /Structure Layout / Floor Layout/ Spatial Organization/ (Stair/Escalator/Tunnel/ Ramp/Doorway/ Travelator) Configuration (Number, Location)/Internal Configuration]**[**Evacuation Route / Egress Route/ Exit Location / Number Of Exits/ Component][Discharge/Redundancy/Remoteness](Occupancy) **[Type]** /[Use/ High-Rise / Mid-Rise/Low-Rise/Skyscraper / Office / Hotel /Public Building / Office / Multi-Apartment / Residence / Domestic/Assembly/Assembly Occupancy / Stadium/ Tunnel/ Arena/Theatre/Cinema/Festival Seating/Grandstand / Heritage Site / Monument / Nightclub / Bar / Club / Sports Facility/ Conference Hall/Outdoor/Temporary Structure / Base / Military Base-Facility/Correctional Facility/Prison/School/University/Library/ Concert Hall / Cabaret / Factory/ Warehouse / Industrial Site / Plant/ Hospital / Reserved Seating Event/ Sport Event/ Terracing / Transport Terminal / Airport/ Rail Station/ Bus Terminal/Bus Stop/Bus Station/ Venue/ Outdoor/Outside Event/ Street/ Venue]**[Height]/[**Number Of Floors**]**/ Dimensions / Footprint/Plan/Floor [**Area]** /Space/Available Space/Boundary /Occupiable Space] |

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| STRUCTURAL COMPONENT |
| This focuses on structural components that are related to movement. Structural components are categorized as a *Pre-Event External Factors*.*Structural Component***[Floor]** / [Level / Refuge Floor / Elevator Floor / Mezzanine / Grade][Public Areas/Classroom /Lecture Hall/Lecture Room/Computer Laboratory/ Changing Room/Men's Room/Ladies Room/Locker Room/Gym/Conference Hall/Function Hall/Library/Study/ Lobby/ Lounge/Office/Restroom/Bathroom / Washroom/Toilet/Security Desk/Waiting Room/Common Room/Games Room/Dining Room/Home Office/Kitchen/Library/Living Room/ TV Room /Home Theater/Recreation Room/Study/Sunroom/Solarium/Private Space/Bedroom / Guest Room / Nursery/Safe Room/Suite/Walk-In Closet/Passages/Alcove/Atrium/Balcony/Corridor/ Deck/Foyer/Hallway/Loft/ Patio/Porch/Skyway/Terrace/Veranda/Vestibule/Attic/ Basement/Box Room / Storage Room/Cellar/Cloakroom/Closet /Electrical Room/Equipment Room/ Boiler Room/Garage/Laundry Room / Utility Room/Mechanical Space/Pantry/Studio/ Server Room /Wardrobe/Workshop/Wine Cellar/Ballroom/Drawing Room / Salon/Great Hall/Larder/Parlour/Scullery/Smoking Room/Conservatory /Outhouse/Shed/Swimming Pool / Security Desk / Ticket Control][Slipperiness / Trip Hazard / Slope/ Underfoot Condition / Unstable Footing / Walkway Surface][Vehicle / Buggy/ Bicycle/Bike/Stroller/Pram/Stretcher/Carrier/Mattress][Grab Bar / Guardrail / Rail / Queuing Rail/ Guardrail Strength / Stability/ Barrier / Crowd Barrier/ Temporary Barrier/Fencing/ Fixed Beam/ Glazed Partition/Chain&Rope/Retractable/Barrier Tape]Gate/Turnstiles/Ticket Booth/Ticket Barrier/Pass/Curb / Curb Ramp/ /Electronic Gate/ Security Gate/ Drop Arm]*Vertical Component:* verticalmeans of egress**[Elevator]** / Lift / Fire Lift / Cab / Dumb Waiter/Mover][Dimensions/Size/Height/Width/Depth/Capacity/Footprint/Floorspace/Occupiable Floor Space/ Area/ Occupiable Area/Usable Area/ Cab Dimensions]/[Maximum Load]/[Capacity][Door]/(Door|Effective)[Width] /[Opening Speed/ Door Opening Speed][Age/Date Of Operation/Years Operational][Constructor/Operator][Speed]/[Speed Of Movement/Rate Of Movement/Speed Of Operation/Acceleration/Deceleration/ Elevator Speed/ Acceleration][Procedure/Floors Served/Priority/Stops/Stations/Refuge Areas/Staffing][Communication, Intercom/Telephone/Walkie-Talkie/PA/Visual/None/Emergency Button/Panic Button][**Type** ] [Express/Routine/Emergency/Goods/Trade/Loading/Service][Configuration (Location, Grouping]**[Stair**][ Exit Stairs / Stairway / Staircase / Stairs /Stairwell/Emergency Stairs/Temporary Stairs /Stair / Aisle Accessway / Aisle Stairs/ Aisle]**[Type] [**External/Internal,Helical/Emergency/Straight/Scissor/Open/Enclosed/Monumental/Wall Material/Roughness/Smoothness/Color/Appearance][**Direction]** [Counter-Clockwise / Clockwise**]****[**Headroom, Clearance, Lighting Levels/Ambient Lighting, Sound Levels/Ambient Sound, / [Stair Width] /[**Effective] [Width]** [Riser / Going/Tread Height / Tread Depth/ Step Height / Step Nosing / Covering/ Material/[**Riser Height]** / [**Tread Depth]** [Step Geometry/[**Step]**[Consistency/Occupiable Area/Footprint/Condition (Debris, Worn, Damage, Wet/Dry/Icy)Diagonal Distance / Horizontal Distance / Vertical Distance] [Handrail Reachability/ Stairway Flight]/[**Handrail]**/Rail/Grab-rail/Central Rail (Projection From Wall/Distance From Wall), Material, Height From Step/Height From Landing, Location (One Side/Both Sides/Central)]**[Landing]** / [Inter-Level Landings / Mezzanine Landings] [Stair Gradient /Stair Paths / Exit Step / Step] [Configuration (Perpendicular, Angle, Straight On), Size][Ladders][Rungs / Height][Type][Fixed/Extendable/Mechanical/Fire/Rope][Rope/Slide/Chute]**[Escalator]** [Angle] / [**Speed**]/ [Step Geometry/Slope/Angle](Clear) [**Width**]/[Effective Width/ Headroom][**Direction**] / [Direction Of Operation / Direction Of Movement / Alternate / Intelligent / Adaptive][Location/Connected Spaces][Emergency Stop/Emergency Halt][Length Of Approach / Run-Off] /[Horizontal Component]/[Top/Bottom/Head/Foot][Handrail]/[ Height/Movement/Height From Step/Height From Start/Projection][**Riser Height]/[Tread Depth]**/[Step Height/Step Depth][Nosing / Edge Of Steps/Edge Of Steps Markings]**[Ramp]**/[Wheelchair Ramp**]/ [**Disabled Access/Handicapped Access][Slope / Angle] / [Incline][Surface / Slipperiness ][Location, Access, Configuration][Headroom][Condition/ Presence Of Debris/ Wetness/Slipperiness/Ice/ Damage/ Unevenness/ Floor Covering][Lighting Levels – Illumination, Routine Lighting, Emergency][*Horizontal Component*]*/*[Horizontal Means Of Egress] [Flat/Corridor / Walkway / Hall/ Horizontal Passage Way/ Horizontal Means Of Egress/ Flat Surface/Passage/ Passageway/Horizontal Plane/Flat] [Bridge / Sky Bridge] [Sidewalk/Path/Pavement][Footprint/Area/Dimensions/Occupiable Space/Capacity/Loading][Height]/[Clearance/Headroom/Ceiling Height][Area]/[Occupiable Area]/ [Occupiable Space/Dimensions](Effective)[Width]/[Maximum Population Size/Maximum Load/Boundary Effects/Edge Effects]/[Usable Area][Use / Type/ Occupancy Type/ Function][Environmental Conditions / Lighting/Ambient Lighting/Emergency Lighting Levels/Visibility Levels/ Emergency Lighting][Wall Covering/Wall Surface/Floor Covering/Floor Surface/Reflectivity/Rough/Smooth/[**Seat**] / Chair/ Stool/ Sofa/Couch/Lounger / Deckchair / Rocking Chair/ Dining Chair/Recliner/Patio Chair]**[**Travelator**]** / Mover / People Mover/ Pedestrian Mover/Moving Walkway/ Accelerating Walkway[Connected Spaces/Configuration/Access][Use]/ [Direction]**[Speed]** / [Acceleration/Deceleration /Movement Speed][Available Width/(Effective) [Width]/[Size/Occupiable Area/Usable area]/ [Capacity]/ [Loading/ Length][Associated Notification/End Warning/End Notification]Use [Emergency | Non-Emergency][Handrail]/ [Rail] [Projection]/[ Handrail Height | Clear Height | Material | Speed)][Lighting Levels (Ambient| Emergency)]*Access Component:***[Doorway]** /[Fire Exit / Emergency Exit / Door / Exit Access/ Main Door / Main Exit / Familiar Exit / Non-Familiar Exit ] [Door Operation] /[ Door Hardware /Panic Bar /Entryway/ Entrance /Exit/ Stair Door / Exit Point / Access Point/ Exit Point][**Type**]/[Leaf / Revolving / Sliding / Sliding/Swing/Folding/Gate/Leaf/Pocket/Rotating/False/Butterfly/ Self-Bolting/French/Panel/Emergency/Automatic Door/ Revolving Door/Magnetic Release] [**State**]/[ Open/Closed/Locked/Blocked/Unavailable/ Inoperative/Damaged] [Opening Mechanism] /[Turn/Panic/Latch/Bolt/Dead Lock/Key, Hinged, Remote Sensor, etc.][Material][Wood/Metal/Glass /Combination), Status (Open/Closed/Blocked/Locked/Unavailable] [**Use**]/[Routine/Emergency/Exit,Egress/Entrance,Access,Ingress/Security][Access ]/[Visual/Visibility/Camouflage/Livery/Color/Approach/Clear/Blocked/Debris][Direction Of Operation]/[ Door Direction Of Use / Door Swing Direction][ Inward/Outward/ Away/ Towards/ Left-Hand/Right-Hand][Dimensions/Size][Door Height /[**Height**]/Clearance/Headroom/Ceiling Height/Weight] [Door Width / Exit Width /Available Width]/(**Effective)[Width]**/[Nominal Width][Appearance][Condition][Damaged/Direpair/Dirty/Locked/Open/Available/Visible/Secure][Area Of Refuge] / [**Refuge]** / [Shelter/ Refuge Area/Place Of Safety/Place Of Refuge/Area Of Refuge] [Communication / Hardened/ Amenities/Provisions/Filtering/Air Supply/ SCBA/ Protective Suits/ Capacity/ Location/ Protection/ Status/ Signage/ Associated Staff-Wardens-Marshals] [Muster Point] / [Assembly Point] / [Meeting Point] [Capacity]/ [Location/ Status/ Signage/ Associated Staff-Wardens-Marshals] |

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| PROCEDURE |
| [**Procedure**] [Type][Evacuation Procedure / Emergency Procedure / Plans /Emergency Plan / Evacuation Strategy / Evacuation Program /Evacuation Procedure/Safety / Circulation / Route / Security / Access / Organizational Norms/Social Norms/ Safety Culture/ Safety Hierarchy/ Ticketing/ Security / Maintenance/ Normal Use/ Ingress/Egress/ Circulation/ Operation/Routine/ Safety / Security / Non-Emergency/Use/ Contrived/ Ad Hoc/ Artificial/ Unplanned/ Drill / Exercise / Evacuation Drill / Emergency Exercise / Evacuation Exercise / Evacuation Experiment/ False Alarm / Non-Event / Pre-Announced Drill / Inaccurate Alarm / Fire Exit Drill/Case Study / Experiment /Direct Evacuation / Indirect Evacuation / Gradual / Announced / Unannounced / Ad Hoc Procedure / Full Evacuation / Partial Evacuation / Zoned / Phased / Staged / Uncontrolled / Controlled / Total/Targeted / Full-Scale / Spontaneous / Sequential / Live / Pre-Recorded/ Disembarkation / Muster / Assembly][Evacuation Route / Emergency Route / Egress Route / Protected Route / Egress Paths / Stair Paths] Pre-Event External Factors and Experience have been combined, as every procedure would initially be an external factor that then becomes a recalled experience. *Pre-Event (External Factor/Experience)*[Event Planning ]/ [**Preparation**] /[ Training/ Exercise/ Standard Of Care/ Environmental Design/ Evacuation Drill/ Drill/ Exercise/ Demand Management /Consequence Management / Safeguarding/ Implementation / Maintenance/Testing]**[Documentation]**/[Literature/Posters/Leaflets/Manuals/ Evacuation Maps / Training Videos/Training Programs/ Games / Public Address / Notification Systems / Mass Communication / Big Voice / Video Screens / LED Devices] *Event-Specific External Cues and Individual Factors have been combined as the impact of a procedure for the first time can be categorized as being an Event-Specific External Cue; however, when subsequently encountered, it may be better characterized as an interaction between Event-Specific External Cue and Event-Specific Individual Factor.**Event (-Specific External Cue/Individual Factor)*[Human Resources]*/*[Event Management / Facility Management /Deference Behavior Management / Sequencing /Metering /Flow Metering /Metered Flow/ Constraining/ Limiting Access /Throttling / Channeling/ Crowd Processing / Crowd Control /Crowd Managers/ Phasing / Zoning/ Building Services Disruption/ Manual Intervention / Physical Assistance / Aid / Staff Instructions/Staff/ Wardens/Active/ Emergency Response Coordinators/Marshals/Helpers/Buddy System/ Police Action / Intervention/Surveillance/ Monitoring/ Supervision/ Support] / [Management]/ [Passive Egress Management / Active Egress Management / Crowd Management / Crowd Control][Technological Resources][Mass Notification /Emergency Communication System/ Big Voice / Evacuation Alarm / Alarm System / Notification System / Alarm /Type/Bell/Siren / Public Address / Pa / Intercom/ Emergency Information Systems /Exit System/ Information Fire Warning System/Warning System / Voice Communication System /Fire Safety System/ Directive Public Announcement] [Led/Screens / Household Strobe/Flashing Lights/ Industrial Strobe/ Strobe System] [Text/ Symbol/ Visual Instructions/Visual Notification][Voice Message/ Verbal Instructions/ Tone / Signal / Alert / Sound/ Beep / T-3/ Swoop/ Modified T-3/ Announcement/ Command/ Call][Audible/ Aural/Visual/Tactile/ Aural/ Sensorial][Message Content / Information][Notification] / [Means Of Awareness / Ambiguous Cue / Unambiguous Cue/ Detectable Warning][Voice Quality / Intelligibility /Audibility/Visibility/ Pitch/Volume/Urgency/Motivation /Priority] [Connectivity / Network / Addressable/Panel Instructions][**Sign] /[Signage**] / [Directional Sign / Emergency Sign / Building Signaling System / Egress Marking / Egress Signage/ Marker System/ Luminance/Photoluminescent / Fluorescent / Led / Color / Brightness/Illumination / Reflective Properties/ Backlit/Reflective][Lighting System/Emergency Lighting/ Ambient Lighting/Dynamic/Static/ Tactile Warning/ Safety Sign/ Ambient Lighting / Backlighting/ Mood Lighting / Side Lighting/ Lighting][Smoke Detection / Smoke Alarm/Mist System / Suppression System / Sprinkler System]*Post-Event*[Assembly/Mustering/Registration/Recording/Assembly Staff/Muster Point/Assembly Point/Meeting Point/Attendance] |

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| ENVIRONMENT |
| *Pre-Event External Factors*[**Ambient**]/[Ambient Noise/ Background Noise/ Noise/Pollution] [PA/Announcements/ Music/Radio/Conversation/ Traffic/Shouting][Ambient Lighting/ Normal Lighting/Daylight/Background Lighting/Television/Screens/Computer Screens/Lighting/Lights/Flashing Lights/Lighting Effects/Sunlight/Advertising]*Event-Specific External Cues*[Natural Hazard/ Weather/ Snow/ Rain/ Wind/ Heat/ Sun/ Hail/ Flood/ Mudslide/ Natural/ Earthquake/ Tidal Wave/ Lightning Strike/Tornado/ Hurricane/ Cyclone/ Thunderstorm][Environmental Impact/ Debris/ Damage/Smoke/ Lighting Level/Ambient/Emergency Lighting Conditions/Visibility Distance/Range/ Viewing Distance/ Darkness/Extinction Coefficient / Optical Density/ [**Smoke**]/[Spread / Smoke Development / Smoke Evolution/ Opacity] / **[Visibility]** /[Smoke Cue/ Visible Smoke][**Gas**]/[ Irritant / Non-Irritant / Toxic/Non-Toxic/Narcotic/Agent/Toxin/Acid/Acidic/Organic/Inorganic/Inert/ Poison/Asphyxiant/ HCN / CO / CO2/ LOW O2/ ACROLEIN / FORMALDEHYDE/HCl/HBr/NO2/SO2/HF][**Fire**]/[Fire Attributes / Fire Characteristics/ Fire Cue/ (Non-)Visible Flame] [**Temperature**]/Ignition/Vitiated/ Smoldering/Oxygen Deprived]Primarily of interest here as the Environmental Conditions can act as Event-Specific External Cues upon the Decision-Making process, and also influence the Individual’s physical attributes. |

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| EVENT LEVEL |
| **BASIC ENGINEERING TERMS**These terms represent input values and potentially results, depending on the manner in which they are used. **[Specific] /[Flow]** [Flow Rate/Rate/ Service Rate/ Discharge Rate/ Flow / Specific Flow / Exit Flow / Exit Flow Rate / Door Flow Rate / Rate Of Discharge / Mean Flow Rate / Max Flow Rate / Optimal Flow / Flow Characteristics/Demand][Dynamic Capacity/Flow Equation/Fundamental Equation/Flow Per Effective Width/Unit Flow/Population Per Effective Width/ Channel / Channel Capacity/Egress Capacity/ Traffic Demand]**[Route Use]**[Critical Path/Nearest/Design/Proximity/Random/ Transition Point / Controlling Component / Constriction / Constraint / Bottleneck/ Pinch Point / Transition In Egress Components[Critical Conflicts/ Merging/ Branching/Mixing Capacity Factor/ Catchment Area]**[Speed]** Travel Speed / Velocity/ Running Speed / Crawling Speed / Movement Speed / Movement Rate[Speed – Distance Curves / Speed –Density Curves / Flow-Density Curves / Fundamental Diagram]**(Population) [Density]**/[ Pedestrian Module/ Density / Level Of Service/Pedestrian Density/ Footfall /Crowd Density/ Occupant Load / Occupant Capacity/Occupant Flow Density/Occupant Density]**[Time]**[Outcome]/[Movement Time / Refuge Time / Response Time/Time Of Evacuation/Arrival Time / Individual Escape Time / Personal Evacuation Time /Overall Evacuation Time/Clearance Time / Evacuation Time / Egress Time / Escape Time / Time To Reach Safety/Decision Time/ Walking Time / Travel Time/Flow Time/Congestion Time/Queue Time/Wait Time/ Cumulative Wait Time/Personal Evacuation Time / Building Evacuation Time/Average Flow Rate/Peak Flow/Escape Time/ Evacuation Performance/Tenability Criteria/ Available Safe Egress Time / Available Safe Escape Time/Required Safe Egress Time / Required Safe Escape Time][**Population Size]**[Loading/Critical Capacity/Number Of (People,Pedestrians,Evacuees)/Crowd Size/Mass/Agent Population/ People Count/Person Count/No.People/Occupant Load/ Expected Occupancy Level/Nominal Use/Expected Use/Occupant Load](Occupiable| Usable) **[Area] /** [Space/Available Space/Floor-Space/Room/Available Room]**[Distance (**Travelled**)]**[Length/Travel Distance /Journey Length][Physical]**[Width][Height][Depth]**[Unit Of Exit Width /Unit Of Stair Width/Available Width/Usable Width/Actual Width/ Lane Width]**(Effective)[Width][Height][Depth]**[Boundary Layer / Boundary Layer Width/Edge Effects/Width Used]EVENT LEVEL TIMELINE**[Pre-Event] [Phase][Time]****[Pre-Cue] [Phase][Time]****[Pre-Response]** [Response Time / Pre-Evacuation Time / Pre-Movement Time / PTAT/Delay Time / Alarm Time / Initial Delay Time / Delay Time To Start / Start-Up Time/Delay/Awareness/Time To Start/Dawdle Time/Recognition Time/Alert Time/PIA Time/Reaction Time/Time To Initial Move/Time To Move/Pre-Egress Activities / Occupant Delay Time/ Time To Start Evacuation-Relocation/Presentation TimePre-Evacuation Activities / Response / Pre-Egress Activities] **[Phase][Time]****[Response]** [Incident/Drill/Exercise/Movement/Experiment/Activity/ Incident/ Fire Emergency/ Event /Refuge/Accident / Emergency/ Incident / Event] **[Phase][Time]** [Evacuation Phase/Evacuation Movement/ Egress Response/Emergency Behavior/ Behaviour / Physical Movement/Movement Phase /Trans-movement Decisions/ Movement/Refuge/Arrival/Escape/Clearance/ Egress/Movement/Evacuation/Action/Refuge/Defense]**[Post-Response] [Phase][Time]****[Post-Event]/** Routine**[Phase][Time]****EMERGENT** CONDITIONS Emergent conditions are categorized as event-specific experiences.There is some limited overlap between the Flow Characteristics described below and the Engineering Terms described previously. This is felt reasonable given that the Engineering terms describe the phenomena that appear in the analysis of the flow characteristics below.**[Flow Characteristics]**/ [Flow Dynamics/ Crowd Configuration/People Movement/ Group Dynamics/Crowd Movement Characteristics/Flow Movement - Movement Characteristics/Walking Patterns] [Unstable Flow / Stable Flow/[Priority/ Stream/ Unidirectional Flow]/[Bidirectional Flow]/[Counter Flow] / [Contra-Flow]/[Upstream/Downstream]/**[Merging]/[Branching]**/[Jamming/ Merging Egress Flows/ Merging/ Laminar/ Turbulence/Uniformity/ Stable Flow / Unstable Flow/ Impedance /Impeded Flow /Crossing Flow / Herding/ Lane Formation/Merging Flow /Coherent Flow/Collision /Crosswalks ][Impact/Compression/Crush/Force / Friction/ Cumulative Pressure /Crush/ Arching/Trampling]/ [**Congestion**](Level/Experienced) /[Crowdedness/ Shock Wave/ Front To Back / Back To Front Communication/ Crowd Crush / Crowd Incident / Crowd Pressure / Compression/Jam / Jam Point /Pressure / Pressure Points/Overcrowding / Stoppage /Blockage/Pinch-Point/Riot / Stampede / Trample/Violence/Melee/Disorder/Panic Situation][Group Formation / Cluster / Convergence Clusters/ Gathering /Focal Point/Staggered Configuration/ Balanced Use Of Routes/ Used According To Design / Expected Use/Efficient Use/ Headway / Interpersonal Distance / Inter-Pedestrian Spacing][**Queue**]/Queuing/Linear Queue/ Organized Queue / Disorganized Queue/ Folded Queue/ Lines][Crowd Formation/Population Density / Pedestrian Density/ Footfall /Density/Crowd Density/ Occupant Load / Occupant Capacity/Occupant Flow Density] |
| MODEL |
| These terms are derived from an examination of articles and reports related to specific models and also from a sample of the many model reviews available; i.e., those existing approaches developed to categorize models.**[Model][**Learning Model / Transport Model/ Scheduling Model / Cellular Automata / Code / Computer Animation /Computer Model/ Deference Behavior Modeling / Evacuation Model / Egress Model/ Escape Model / Movement Model/ FIST Model/ Fluid Model/ Gas Model/ Lattice Model / Particle Model / Graphical Model / Hydraulic Model / Mathematical Model /Movement Analysis/ Network Model/ Network Analysis/ Optimization Model/ Pedestrian Model/ Circulation Model/ Queuing Model/ Risk Model / Simulation/ Social Force Model/Real-Time Model /Analog Model /Effective Width Model /Time Based Analysis/Action-Oriented Model/ Theoretical Model/ Prescriptive Codes/ Prescriptive Model /Goal-Oriented Model/ Derived Equation / Flow/ Hydraulic/ (General Purpose) Modeling Tools/ Evacuation Simulation / Conceptual Model / Table-Top/ Agent-Based Model / Naturalistic Model / Response-Primed Model / Egress Calculation Model/ Movement Algorithm/ Rulebase Model/ Analogy Model/ Stress Model/ Calculation Procedure/ Expert Analysis/ Mathematical Calculation/ Hydraulic Analogy / Network Flow Models/ Behavioral Models/ Partial Behavioral Models /Analog Model/ Discrete Model/ Perception Control Theory / Egress Prediction/ Ellipse Model/ Fractional Effective Dose Model/ Engineering Analysis / Calculation/Transport Model/Traffic Model/ Life Safety Code/ Life Safety Evaluation /Factor Of Safety/Fire Codes /Evacuation Time Prediction / Evacuation Simulation Model/ Parallel/ Distributed]The following list represents a combination of terms used in model reviews and terms used by model developers to describe their own model developments.[Testing][Validation / Verification / Testing / Component Testing/ Peer Review/Benchmarking / Functional Testing / User Testing / Third Party Testing/ Back Of Envelope/ Sanity Check/ (Alpha/Beta) Testing][Code Requirements / Fire Drills / Previous Experiments / Other Models / Third Party / None / Calibration Of Parameters / Validation Of Results/ Functional Testing/ Component Testing / Qualitative Testing / Quantitative Testing / Parametric Testing / Full-Scale Tests][Model Origins] /[Background]: [References /Developers / Organization / Language / Country Of Origin / Age/ Date Of Development][Availability]:[Free / Fee / License / Consultative][Requirements]: [Input / Data Needs / User Expertise / Hardware Requirements / Memory Requirements / Windows/ Apple/Size / PC-Based / Technical Requirements][CAD/CAM [Yes/No][Application Area]: [Activities Within Specific Areas / Specific Area / Structural Area/ Surrounding Area][Process / Component/Structure/Area][Use]:[Naïve / Operational / Engineered / Predictive / Real-Time / Interactive][Environment] (Representation)/ [Fire]:[Incorporate Data / User-Data / Internal Model / FED / Fire/Smoke / None][Population] (Representation)/[Crowd Mass/Human Related]: [Human-Related / Individual / General / Global / Aggregate][Agent / Audience /Person / Evacuee / Avatar / Automata / Individual / Population / Actor / Passenger / Particle / Walker / Runner / Crawler /Reactive Agents / Synthetic Humans / Participant/ Grain / Autonomous Agents][Behavioral Response] (Representation)/ Behavior-Related: [AI (Genetic Algorithm, Neural Net, Artificial Life, Case-Based, Learning Model, Decision Theory, Agent-Based, Intelligent, Evolutionary Computing, Heuristics, Genetic Programming, Vr)/Rule-Based / Functional Analogy / Implicit / None / Movement / Behavior / Partial Behavior/ Movement (Fluid) / Movement (Particle) / Matrix/ Fluid-Based / Matrix-Based / Discrete Choice / Adaptive][Organization]/[Host/ Developer/ Funding Organization/ Sponsor/ Supporter][General Approach] / [Model Resolution / Refinement / Key Theories]: [Simulation / Optimization / Risk Assessment / Monte Carlo / Node-Network Model / Fine Structure Simulation / Stochastic / Deterministic / Conditional Stochastic / Microscopic / Mesoscopic / Macroscopic / Conceptual / Computational / Estimated / 1st Principle / Fundamental/ Emergent / Grid-Based/ Simple Calculation Method / Estimation Model / Movement Model / Behavioral Simulation Model / Flow-Based/ Cellular Automata / Agent-Based / Models Including Sociological Factors / Specific/General / Phenomenological/First Principles / Discrete/Continuous/ Numerical / Analytical/ Quantitative / Qualitative/ Level Of Refinement / Resolution/ Scale /Scope/ Generation / Skill-Based / Rule-Based / Knowledge-Based / Operational/Tactical/Strategic / Logistical Model/Field/ System Dynamics/Game/Discrete Event Simulation/General Force Model/ Hierarchical Model/ Social Force Model/Activity-Based Model][Output]:[Quantitative / Qualitative / 2D / 3D / None / Textual / Visual / General / Specific / Animation / VR][Procedure] (Representation)/ [Scope]:[Pedestrian / Ingress / Egress/ Circulation / Emergency / Non-Emergency / Assembly / Boarding / Entrance][Structure] (Representation)/ [Building Related]: [Scale/Fine/Coarse/Continuous/Discrete/Mesoscopic / Discretization/Individual-Specific/Decision/Event] [Basic Elements: Area / Node / Tile/ Space / Square / Cell / Plaquette / Arc / Edge / Links / Constraints/Passage / Connectors/ Region / Zone / Loading / Lattice/ Flow/ Force /Capacity/ Network / Grid / Numerical Grid / Map / Node-Network / Matrix /Contour / Routes / Probability / Exit Choice / Dynamic Capacity / Traversal/ Paths / Transition Probabilities/Distance Map/Queuing Network / Layout / Configuration / Spatial Structure / Radial Directions / Von Neumann Neighborhood/ Moore Neighborhood/Network Representation/ Neighborhood/Attraction Surfaces / Sink/Source/Gradient / Space / (Evacuation) Tree / Difficulty / Cost / Ranking / Demand / Ribbons/ Connectivity/ Index / Topological Map/Risk Ranking /Rank/Metric / Network Diagram/Potential Field/Domain/ Social Distance/ Graph/Intelligent Space/Architecture/Layout/Weighted Map][Calculation / Update]: [Parallel / Parallel Update / Sequential / Shuffled Sequential / Ordered Sequential / Random Sequential] |

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| DATA |
| [Acquisition][Process/Data Collection/ Acquisition/Observation /Measurement / Experiment / Participant Observation / Interview / Survey/ Drill/ Exercise / Data Acquisition / Naturalistic Observation / Tracking/ Monitor/Review/Research/Literature Review/Reading/ Structured Observation / Unstructured Observation][(Acquisition|Collection) [Device]: Video Recording / Video Monitoring / CCTV Monitoring/ Camera /Questionnaire (Open-Ended/Closed-Ended) /Poll/Empirical Data /Couple/Empirical Evidence / Measurement/ Mensuration/ Counter / Sensor Mat/ Pressure Mat/ Active Infrared Sensor/Passive Infrared Sensor/ Laser Scanner/Microwave Sensor/Tracking Device/ RFID][Source][Experiment/ Drill/ Circulation / Routine Use/ Entering/ Filling / Loading/ Ingress Movement/ Egress Movement / Exercise/ Real Event/ Incident/ Disaster/ Evacuation/ Movement/ Trial/ Experiment/ Online Source/ Footage/ Stills/ Photographs/ Anecdote/ Newspaper Reports/ Newscast/ News Cast/ Reading Material/ Journal Articles/Reports/Papers/Websites/Personal Experience / Direct Observation / Live Viewing/Pre-Existing Record]Outcome [**Format**][Footage/ Tape/ Films/ Photographs/ Stills/ Pictures/ Notes/Observations/Manual Notes/ Numerical/Quantitative / Descriptive / Qualitative / Sample / Representative / Graphical] |

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| Appendix E: Information Provided to the Narrative Timeline Notation |

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| --- | --- | --- | --- |
| **LABEL** | **CATEGORIES** | **SUB-CATEGORIES** | **COMMENTS** |
| **FORMAT** | **Numerical**A set of raw data |  | *[1.3, 4.6, 5,2]* |
| **Tabular**Results organized into measures against categories |  |

|  |  |  |
| --- | --- | --- |
|  | Pre-Response time (sec) | Speed (m/s) |
| Men | 80 | 1.2 |
| Women | 90 | 1.1 |

 |
| **Descriptive**Text describing some aspect of the event |  |  “We moved along the corridor only to find the exit overcrowded. However, we could not turn back given the arrival of smoke.” |
| **Chart**Graphical representation of the data. |  | Scatter-plot, line, pie-chart, bar/column, surface, contour maps, etc. |
| **Pictorial** | *Conceptual* Symbolic representation of some aspect of the event. For instance, high-level process diagram, timeline, etc. representing some aspect of the event. | timelineapril2009.jpg |
| *Simplistic*Simplified sketch of a situation related to the event. |  |
| *Realistic* Naturalistic representation of a scene during the event (e.g., a rendered storyboard), or the development of some aspect of the event (e.g., crowding at an exit). |  |
| *Photo-Realistic*Actual footage from the event. For instance, video footage / photographic footage, etc. |  |
| **SCALE** | **Event-level** Information at the level of the event itself. For instance, the manner in which the structure was cleared. Emergent conditions that develop at the scenario level. |  | **13****8****4****1**High-level contour maps, footfall diagrams, itinerary maps, etc. |
| **Key Event Elements**Information related to the development of one of the key elements of the event or the data collection process. | *Procedure*Information related to the procedure |  |
| *Response*Information related to the behavioral response of the population of interest |  |
| *Organization* Information related to the organization within which the event took place. |  |
| *Population* Information related to the target population involved |  |
| *Objectives*Information on the underlying targets and objectives of the data collection process. |  |
| *Structure*Information on the structure in which the event took place |  |
| *Environment*Information on the evolving environmental conditions. |  |
| *Data Collection Activities*Information on the methods employed to collect the data of interest. |  |
| **Individual Level**Information related to one of the individual components of within the key elements. |  | For instance, at the level of a person, door, smoke development, etc.ERCSWEEP |
| **Individual Process**A process related to one of the individual processes described above. |  | Process within an individual level component.For instance, cognitive process, door operation, etc. |
| **DIMENSION** | **1D** |  | Line plot |
| **2D** |  | Scatter-plot / storyboard |
| **3D** |  | Surface |
| **Multi** |  | Set of results |
| **FOCUS** | **Chronological**Information in relation to the event time |  | Data related to time |
| **Spatial**Information on the locations being described or referred to. |  | Data related to particular location |
| **Episodic**Information on the passage of incidents, not necessarily consistent or uniform. |  | Data related to particular events, itinerary maps, etc. |
| **Abstract**Information related to some conceptual process or component. |  | Data related to a particular process; e.g., decision-making. |
| **PROGRESS** | **Dynamic**Information that is related to the passage of time. | *Discrete* | Storyboard of pictures, itinerary maps, etc. |
|  | *Continuous* | e.g., continuous function, animation, etc. |
|  | **Static**Information that is not related to the passage of time. |  | Snapshot |
| **TIMELINE COMPONENT** | **Pre-Event** |  | Time between initial use of structure to the beginning of an event (if appropriate). |
| **Pre-Cue** |  | Time between the beginning of an event and the presence of the first cues that may indicate the existence of the event. For instance, presence of smoke, alarm initiation, staff activities, etc. |
| **Pre-Response** |  | Time between receiving cue(s) and initiating purposive action to reach a point of safety. |
| **Response** |  | Time spent performing purposive actions to reach objective. For instance, evacuating the building, reaching a shelter, etc. |
| **Post-Event** |  | Time from objective being reached to active procedures being stopped; i.e., time for the event to be declared over once safety has been reached by the population. |