

# PERFORMANCE DATABASE COLUMN DEFINITIONS

|                              | COLUMNS | DATA TYPE     | DEFINITION           |  |
|------------------------------|---------|---------------|----------------------|--|
| <b>EVENT</b>                 | 1       | Event No.     | <i>Informational</i> | Event Number   |
|                              | 2       | Event ID      | <i>Informational</i> | [Test] - [Event number in test] - [Structure or Free-Field]                              |
|                              | 3       | Research ID   | <i>Informational</i> | [Lead researcher running the test][test number in the testing series]                    |
|                              | 4       | Test          | <i>Informational</i> | T [liquefiable layer thickness (m)] - [liquefiable layer $D_R$ (%)] - [additional info.] |
|                              | 5       | ESN           | <i>Informational</i> | Event Sequence Number: The $n^{\text{th}}$ motion in the testing sequence for each test  |
|                              | 6       | Struct        | <i>Informational</i> | Name of structure or Free-Field (FF) in the event  |
|                              | 7       | Nscale        | <i>Measured</i>      | Average scaling factor achieved during spin-up   |
| <b>SOIL PROPERTIES</b>       | 8       | Visc (cSt)    | <i>Measured</i>      | Viscosity of the pore fluid used in the model; measured before testing starts            |
|                              | 9       | Water (m)     | <i>Measured</i>      | Average depth to water (+) or elevation (-) measured relative to the soil surface        |
|                              | 10      | Mat_L1        | <i>Informational</i> | Material type used for the construction of Layer 1                                       |
|                              | 11      | H_L1 (m)      | <i>Measured</i>      | Initial prototype thickness of Layer 1   |
|                              | 12      | Dr_L1         | <i>Inferred</i>      | Initial nominal Relative Density ( $D_R$ ) of Layer 1                                    |
|                              | 13      | Mat_L2        | <i>Informational</i> | Material type used for the construction of Layer 2                                       |
|                              | 14      | H_L2 (m)      | <i>Measured</i>      | Initial prototype thickness of Layer 2   |
|                              | 15      | Dr_L2         | <i>Inferred</i>      | Initial nominal Relative Density ( $D_R$ ) of Layer 2                                    |
|                              | 16      | Mat_L3        | <i>Informational</i> | Material type used for the construction of Layer 3                                       |
|                              | 17      | H_L3 (m)      | <i>Measured</i>      | Initial prototype thickness of Layer 3   |
|                              | 18      | Dr_L3         | <i>Inferred</i>      | Initial nominal Relative Density ( $D_R$ ) of Layer 3                                    |
|                              | 19      | Mat_L4        | <i>Informational</i> | Material type used for the construction of Layer 4                                       |
|                              | 20      | H_L4 (m)      | <i>Measured</i>      | Initial prototype thickness of Layer 4   |
|                              | 21      | Dr_L4         | <i>Inferred</i>      | Initial nominal Relative Density ( $D_R$ ) of Layer 4                                    |
|                              | 22      | CurvedSurf    | <i>Informational</i> | Is the surface of the soil curved to match centrifuge g-field radius?                    |
| <b>STRUCTURAL PROPERTIES</b> | 23      | W (m)         | <i>Measured</i>      | Width of the structural footing (running N-S in the container)                           |
|                              | 24      | L (m)         | <i>Measured</i>      | Length of the structural footing (running E-W in the container)                          |
|                              | 25      | t (m)         | <i>Measured</i>      | Thickness of the footing   |
|                              | 26      | H (m)         | <i>Measured</i>      | Height of the structure from the bottom of the footing to the top of the deck            |
|                              | 27      | H_cm (m)      | <i>Measured</i>      | Height from the base of the footing to the center of mass of the entire structure        |
|                              | 28      | H_cd (m)      | <i>Measured</i>      | Height from the base of the footing to the center of mass of the deck mass               |
|                              | 29      | M_struct (kg) | <i>Measured</i>      | Mass of the full structure   |
|                              | 30      | M_deck (kg)   | <i>Measured</i>      | Mass of the deck   |
|                              | 31      | M_col (kg)    | <i>Measured</i>      | Mass of the columns  |
|                              | 32      | M_foot (kg)   | <i>Measured</i>      | Mass of the footing  |
|                              | 33      | Embed (m)     | <i>Measured</i>      | Initial footing embedment depth; measured from soil surface to bottom of footing         |
|                              | 34      | q (kPa)       | <i>Derived</i>       | Bearing pressure of structure: total structural weight over the footing area             |
|                              | 35      | T_fb (s)      | <i>Measured</i>      | Fixed-base period of the structure; measured before testing                              |
|                              | 36      | Modification  | <i>Informational</i> | Ground modification: ground improvement, adjacent bldgs., piles, etc.                    |

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|-----------------------|---------|-----------------|----------------------|---|
| <b>BASE MOTION</b>    | 37      | Motion          | <i>Informational</i> | Name and relative size of the input motion  |
|                       | 38      | Amp             | <i>Measured</i>      | Amplification factor imposed on the input motion file   |
|                       | 39      | IF (Hz)         | <i>Measured</i>      | Input motion frequency  |
|                       | 40      | RPM             | <i>Measured</i>      | Revolutions per minute of the centrifuge bucket during the event  |
|                       | 41      | PGA_B (g)       | <i>Measured</i>      | Peak Base Acceleration: base plate peak acceleration on the centrifuge  |
|                       | 42      | PGV_B (cm/s)    | <i>Derived</i>       | Peak Base Velocity: peak velocity derived from integration of the base accel.-time history with a high pass filter and corner frequency of 0.2Hz.                       |
|                       | 43      | CAV5 (g-s)      | <i>Derived</i>       | Cumulative Absolute Velocity: ground motion intensity meas. calculated by the time-integral of the absolute acceleration-time series over a threshold of 0.005g         |
|                       | 44      | CAVstd (g-s)    | <i>Derived</i>       | CAV over a threshold of 0.025g  |
|                       | 45      | la (m/s)        | <i>Derived</i>       | Arias Intensity: ground motion intensity meas. calculated by the time-integral of the square of the acceleration time history   |
|                       | 46      | SIR (m/s/s)     | <i>Derived</i>       | Shaking Intensity Rate: ground motion intensity meas. calculated by summing the Arias Intensity (5–75%) over the duration (5–75%) of the motion                         |
|                       | 47      | cCAV5 (g-s)     | <i>Derived</i>       | Cumulative CAV5 up to and including the event   |
|                       | 48      | cCAVstd (g-s)   | <i>Derived</i>       | Cumulative CAVstd up to and including the event   |
|                       | 49      | cla (m/s)       | <i>Derived</i>       | Cumulative la up to and including the event   |
| <b>SURFACE MOTION</b> | 50      | PGA_S 1 (g)     | <i>Measured</i>      | Maximum surface acceleration measured by surface accelerometer #1   |
|                       | 51      | PGA_S 2 (g)     | <i>Measured</i>      | Maximum surface acceleration measured by surface accelerometer #2   |
|                       | 52      | PGA_S 3 (g)     | <i>Measured</i>      | Maximum surface acceleration measured by surface accelerometer #3   |
|                       | 53      | PGA_S 4 (g)     | <i>Measured</i>      | Maximum surface acceleration measured by surface accelerometer #4   |
|                       | 54      | ACC No          | <i>Informational</i> | Surface accelerometer number used for surface motion analysis   |
|                       | 55      | PGV_S (cm/s)    | <i>Derived</i>       | Peak Surface Velocity: peak velocity derived from integration of the surface accel.-time history with a high pass filter and corner frequency of 0.2Hz.                 |
|                       | 56      | CAV5_S (g-s)    | <i>Derived</i>       | Surface Cumulative Absolute Velocity: ground motion intensity meas. calculated by the time-integral of the absolute acceleration-time series over a threshold of 0.005g |
|                       | 57      | CAVstd_S (g-s)  | <i>Derived</i>       | Surface CAV over a threshold of 0.025g  |
|                       | 58      | la_S (m/s)      | <i>Derived</i>       | Surface Arias Intensity: ground motion intensity meas. calculated by the time-integral of the square of the acceleration time history                                   |
|                       | 59      | SIR_S (m/s/s)   | <i>Derived</i>       | Surface Shaking Intensity Rate: ground motion intensity meas. calculated by summing the Arias Intensity (5–75%) over the duration (5–75%) of the motion                 |
|                       | 60      | cCAV5_S (g-s)   | <i>Derived</i>       | Surface Cumulative CAV5 up to and including the event   |
|                       | 61      | cCAVstd_S (g-s) | <i>Derived</i>       | Surface Cumulative CAVstd up to and including the event   |
|                       | 62      | cla_S (m/s)     | <i>Derived</i>       | Surface Cumulative la up to and including the event   |

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|                | COLUMNS | DATA TYPE      | DEFINITION           |  |
|----------------|---------|----------------|----------------------|--|
| <b>RESULTS</b> | 63      | Set (mm)       | <i>Derived</i>       | Incremental settlement of the structure or free-field for the specific event       |
|                | 64      | cSet (mm)      | <i>Derived</i>       | Cumulative settlement of the structure or free-field up to and including the event |
|                | 65      | Rot (rad)      | <i>Derived</i>       | Incremental in-plane rotation of the structure for the specific event              |
|                | 66      | cRot (rad)     | <i>Derived</i>       | Cumulative in-plane rotation of the structure up to and including the event        |
| <b>MISC.</b>   | 67      | References     | <i>Informational</i> | References and sources of data (Data Reports, Journal Papers, etc.)                |
|                | 68      | NEEShub        | <i>Informational</i> | NEEShub project name and experiment  |
|                | 69      | DOI            | <i>Informational</i> | Digital Object Identifier for the cited data                                       |
|                | 70      | BMA File       | <i>Informational</i> | Base motion time history file: Col 0–2: time, East base accel., West base accel.   |
|                | 71      | SMA File       | <i>Informational</i> | Surface motion time history file: Col 0–N: time, accel. 1, accel. 2,...accel. N    |
|                | 72      | SMA Sensor     | <i>Informational</i> | Sensor names of surface accel. 1 through N in columns 50-53 and 71                 |
|                | 73      | Container Info | <i>Informational</i> | Information on the container used in the experiment                                |
|                | 74      | Comments       | <i>Informational</i> | Comments on the footing, structure, test, motion, etc.                             |