ROCKING FOUNDATIONS DATASET COLUMN DEFINITIONS - SLOW CYCLIC LOADING EXPERIMENTS					
TITLE	COLUMNS		COLUMN DEFINITION	DATA FORMAT	IMPORTANCE
ID	1	Row Num.	Sequential database record number.	Text	Required
Project and Test Series	2	Cite data source	The full citation(s) that users must cite, when heavily using this project data. (e.g. "Gajan, S., and Kutter, B. L. (2008). Capacity, settlement, and energy dissipation of shallow footings subjected to rocking. ASCE J. Geotech. Geoenviron. Engrg., 134(8): 1129-1141.")	Text	Required
	3	PI	The Principal Investigator of the project.	Text	Required
	4	Co-PI's	The Co-Principal Investigator(s) of the project.	Text	Required
	5	Researchers	Lead and assistant graduate student researchers of the test series.	Text	Required
	6	Sponsor	Sponsor/funding source of the project.	Text	Required
	7	Test Series	Name of the test series or phase of the experiment.	Text	Required
Facility & Equipment	8	Test Site	Name of the facility that the experiment was conducted at.	Text	Required
	9	Test Type	Categorization of test; e.g. centrifuge, small-scale 1g, large-scale 1g.	Text	Required
	10	Cont. N.	Facility name for the container used.	Text	High Priority
	11	Cont. L. [m]	Inner dimension of the model container parallel to (primary) loading axis.	Floating	Required
	12	Cont. W. [m]	Inner dimension of the model container normal to (primary) loading axis.	Floating	Required
	13	Cont. H. [m]	Inner height of the model container.	Floating	Required
	14	Actuator Type	Description of actuator type; e.g. servo-hydraulic, stepper motor, etc.	Text	Required
	15	N Actuators	The number of actuators used to control the loading of the structure.	Text	Required
	16	Loading Protocol Description	Displacement-controlled or force-controlled, and monotonic or cyclic loading.	Text	Required
	17	Connection	Description of the mechanism used to connect the structure to the actuator.	Text	Required
	18	Conn. Images	Image(s) of the connection between the actuator and the structure.	File(s)	High Priority
Packet	19	Event ID	Specific event identification.	Text	Required
	20	Test Date	Date of the packet (YYYY/MM/DD).	Date	High Priority
	21	TN Event Packets	Total number of event packets that this event is broken into. Each event may be broken into many packets to facilitate analysis of the data. Each row in the database contains data for a single packet.	Integer	Required
	22	Packet N	Packet number for this data row. If this packet represents the 3rd packet of this loading sequence, report 3.	Integer	Required
	23	RPM	Revolutions per minute of the centrifuge.	Floating	High Priority
Scaling Quantities	24	Gravity*	Scale factor for gravity. For 1 g tests, report 1. For centrifuge tests report centrifugal acceleration at the base of the footing as a multiple of earth's gravity.	Floating	Required
	25	Length*	Length scale factor, defined as model length/displacement over prototype.	Floating	Required
	26	Mass*	Mass scale factor, defined as model mass over prototype mass.	Floating	Required
	27	Time*	Time scale factor, defined as model time over prototype time.	Floating	Required
	28	Model or Prot. Data?	If prototype is chosen, all quantities should be consistently converted from model scale based on the provided scaling laws. If model scale is chosen, then all quantities must be reported as actual dimensions of the test without scaling.	Text	Required

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Description of Soil Layers	29	Soil Depth [m]	Total thickness of the soil profile.	Floating	Required
	30	Water Depth [m]	Average depth to water relative to the soil surface (+) .	Floating	Required
	31	N Soil Layers	Number of soil layers in the container.	Floating	Required
	32	Modification	Ground modification; e.g. ground improvement, piles, concrete mix.	Text	Required
Layer 1 Soil Properties	33	Mat_L1	Name of soil material in layer 1.	Text	Required
	34	H_L1 [m]	Thickness of soil layer 1.	Floating	Required
	35	Dr_L1 [%]	Best estimate of average relative density of layer 1 if it consists of sand.	Floating	Required
	36	phi_cv_L1 [deg.]	Best estimate of constant-volume (critical state) friction angle of layer 1 if it consists of sand.	Floating	Required
	37	STDev_Dr_L1 [%]	Best estimate of standard deviation of relative density of layer 1 if it consists of sand. If the standard deviation was not measured, approximate estimate is acceptable.	Floating	High Priority
	38	Su_L1_top [kPa]	Best estimate of undrained shear strength of the top of layer 1 if it is saturated clay.	Floating	High Priority
	39	Su_L1_mid [kPa]	Best estimate of undrained shear strength of the middle of layer 1 if it is saturated clay.	Floating	High Priority
	40	Su_L1_bot [kPa]	Best estimate of undrained shear strength of the bottom of layer 1 if it is saturated clay.	Floating	High Priority
	41	STDev_Su_L1_mid [kPa]	Best estimate of standard deviation of undrained shear strength of the middle of layer 1 if it consists of saturated clay. If the standard deviation was not measured, approximate estimate is acceptable.	Floating	High Priority
	42	Density_L1 [kg/m^3]	Average total density of soil layer 1.	Floating	High Priority
	43	wc_L1 [%]	Average water content of soil layer 1.	Floating	High Priority
Layer 2 Soil Properties	44	Mat_L2	Name of soil material in layer 2.	Text	Required
	45	H_L2 [m]	Thickness of soil layer 2.	Floating	Required
	46	Dr_L2 [%]	Best estimate of average relative density of layer 2 if it consists of sand.	Floating	Required
	47	phi_cv_L2 [deg.]	Best estimate of constant-volume friction angle of layer 2 if it consists of sand.	Floating	Required
	48	STDev_Dr_L2 [%]	Best estimate of standard deviation of relative density of layer 2 if it consists of sand. If the standard deviation was not measured, approximate estimate is acceptable.	Floating	High Priority
	49	Su_L2_top [kPa]	Best estimate of undrained shear strength of the top of layer 2 if it is of saturated clay.	Floating	High Priority
	50	Su_L2_mid [kPa]	Best estimate of undrained shear strength of the middle of layer 2 if it is of saturated clay.	Floating	High Priority
	51	Su_L2_bot [kPa]	Best estimate of undrained shear strength of the bottom of layer 2 if it is of saturated clay.	Floating	High Priority
	52	STDev_Su_L2_mid [kPa]	Best estimate of standard deviation of undrained shear strength of the middle of layer 2 if it consists of saturated clay. If the standard deviation was not measured, approximate estimate is acceptable.	Floating	High Priority
	53	Avg. Tot. Density_L2 [kg/m^3]	Average total density of soil layer 2.	Floating	High Priority
	54	Avg. Water Content_L2 [%]	Average water content of soil layer 2.	Floating	High Priority

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Layer 3 Soil Properties	55	Mat_L3	Name of soil material in layer 3.	Text	Required
	56	H_L3 [m]	Thickness of soil layer 3.	Floating	Required
	57	Dr_L3 [%]	Best estimate of average relative density of layer 3 if it consists of sand.	Floating	Required
	58	phi_cv_L3 [deg.]	Best estimate of constant-volume friction angle of layer 3 if it consists of sand.	Floating	Required
	59	STDev_Dr_L3 [%]	Best estimate of standard deviation of relative density of layer 3 if it consists of sand. If the standard deviation was not measured, approximate estimate is acceptable.	Floating	High Priority
	60	Su_L3_top [kPa]	Best estimate of undrained shear strength of the top of layer 3 if it is saturated clay.	Floating	High Priority
	61	Su_L3_mid [kPa]	Best estimate of undrained shear strength of the middle of layer 3 if it is saturated clay.	Floating	High Priority
	62	Su_L3_bot [kPa]	Best estimate of undrained shear strength of the bottom of layer 3 if it is saturated clay.	Floating	High Priority
	63	STDev_Su_L3_mid [kPa]	Best estimate of standard deviation of undrained shear strength of the middle of layer 3 if it consists of saturated clay. If the standard deviation was not measured, approximate estimate is acceptable.	Floating	High Priority
	64	Avg. Tot. Density_L3 [kg/m^3]	Average total density of soil layer 3.	Floating	High Priority
	65	Avg. Water Content_L3 [%]	Average water content of soil layer 3.	Floating	High Priority
Footing Properties	66	Footing Shape	Description of footing shape; e.g. square, rectangular, circular, trapezoidal, I-shaped, C-shaped.	Text	Required
	67	Footing Material	Description of footing material; e.g. steel, reinforced concrete.	Text	Required
	68	B [m]	Maximum footing width normal to (primary) loading direction. For a skewed footing, the definition applies to the plan geometry of the footing before rotated counter-clockwise about an upward vertical axis by the skew angle (see guidelines to contributors).	Floating	Required
	69	L [m]	Maximum footing length parallel to (primary) loading direction. For a skewed footing, the definition applies to the plan geometry of the footing before rotated counter-clockwise about an upward vertical axis by the skew angle (see guidelines to contributors).	Floating	Required
	70	B_min [m]	Minimum footing width; only applicable for trapezoidal footings.	Floating	Required
	71	t_w [m]	Thickness of the footing web; only for C-shaped and I-shaped footings.	Floating	Required
	72	t_f [m]	Thickness of the footing flange; only for C-shaped and I-shaped footings.	Floating	Required
	73	MAR	Missing plan area of a footing to become a complete rectangle divided by the area of the circumscribed rectangle. This property is only required for trapezoidal, I-shaped and C-shaped footings. Enter zero for rectangular and circular footings.	Floating	Required
	74	Skew Angle [deg.]	Initial angle between the footing length and the (primary) loading direction, defined as (+) for counter-clockwise rotation about an upward vertical axis (see guidelines to contributors).	Floating	Required
	75	t [m]	Footing thickness.	Floating	Required
	76	Embed't [m]	Initial footing embedment depth; measured from the soil surface to the bottom of the footing at the beginning of the loading sequence (before packet #1).	Floating	Required
	77	M_ftg_cover [kg]	Footing cover mass, i.e. any mass resting on the top of the footing.	Floating	Required

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Superstructural Properties	78	Structure Type	Idealized type of superstructure; e.g. SDOF, shear wall.	Text	Required
	79	Structure Images	Photo or drawing of the model and superstructure.	File(s)	High Priority
	80	Column Material	Description of column material; e.g. steel, reinforced concrete.	Text	Required
	81	h_cm [m]	Height from the base of the footing to the center of mass of the entire structure, including footing and footing cover.	Floating	Required
	82	M_total [kg]	Mass of entire structure, including footing and footing cover.	Floating	Required
	83	P_st [kN]	Total static weight of the entire structure at the base of the footing. For centrifuge tests it is defined as the mass of the entire structure times the centrifugal acceleration at entire stucture's center of mass.	Floating	Required
Bearing Area Properties	84	q [kPa]	Initial bearing pressure, defined as total weight of the entire structure measured at the base of the footing divided by the gross footing area.	Floating	Required
	85	q_ult_tot [kPa]	Initial bearing capacity of the footing for vertical concentric loading.	Floating	Required
	86	q_ult_crit0 [kPa]	Initial bearing capacity of the critical contact area for vertical loading (i.e. shear neglected).	Floating	High Priority
	87	q_ult_crit [kPa]	Initial bearing capacity of the critical contact area for vertical loading including the effect of shear. The Cremer et al. (2001) method is recommended instead of inclination factors.	Floating	High Priority
	88	BCap Calcs	Sources of the method used for estimating friction angles and ultimate bearing capacities.	File	Required
System Properties	89	FS_a	Analytically calculated initial static factor of safety of the foundation with respect to vertical concentric loading.	Floating	Required
	90	FS_e	Experimentally determined initial static factor of safety of the foundation with respect to vertical concentric loading.	Floating	Required
	91	M/VL	Normalized-moment-to-shear ratio at the base centroid of the footing, defined as the height to the loading point from the base of the footing divided by footing length.	Floating	Required
	92	A_c/A	Ratio of the critical contact area to mobilize rocking moment capacity to the plan area of the footing. (A_c = P_st / **q_ult_crit**).	Floating	High Priority
	93	M_{cf_a} [N-m]	Analytically calculated rocking moment capacity of the foundation for static axial load.	Floating	Required
	94	M_{cf_e} [N-m]	Experimentally determined rocking moment capacity of the foundation for static axial load.	Floating	Required
	95	Moment Cap. Calcs	Description of procedure for calculating moment capacity of the footing.	File(s)	Required
Input Loading Protocol Properties	96	Loading DOFs Description	Description of loading degrees of freedom used in the packet; e.g. 1D-H, 2D-H, 2D-V, 3D.	Text	Required
	97	N Packets Reported	Total number of packets reported in database for this event. This is equal to the number of rows used to desribe this event	Text	Required
	98	N Cycles per packet	The number of cycles of loading applied in this packet	Text	Required
	99	Amplitude [m or N]	Absolute value of the peak target displacement or force being input into the (primary) actuator. If load controlled report results in units of Newtons, If displacement controlled, report results in units	Floating	Required
	100	T cycles [s]	The period of the input **cyclic** displacement or force; not applicable for monotonic loading.	Floating	Required
	101	Loading Protocol Plot	Image of target input diplacement or force time history protocol for all packets of cycles.	File	High Priority
	102	Loading Protocol File	Target input displacement or force time history (see guidelines to contributors).	File	Required

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Data	103	Deformation Plots	Image of key deformation plots (see guidelines to contributors).	File	High Priority
	104	Foundation Response Time History Data	Response history of selected key parameters (see guidelines to contributors). Column is optional.	File	Required
	105	Assumptions in calculation of applied moment	State if the applied moment includes P-Δ moment.	Text	Required
Results - Rotation	106	Pk. Ftg. Rotation [rad]	Magnitude of the peak of the resultant footing rotation, measured about two orthogonal horizontal axes.	Floating	High Priority
	107	Cum. Prim. Ftg. Rotation [rad]	Packet-based cumulative primary footing rotation, defined as the sum of the absolute values of local maxima and minima of the rotation time history if the difference between two neighboring local peaks is greater than 2 mrad. The rotation time history should be shifted to start from a zero value and high-pass filtered to remove residual rotation (see guidelines to contributors). Column is optional.	Floating	Optional
	108	Tot. Cum. Prim. Ftg. Rotation [rad]	Total cumulative primary footing rotation, defined as sum of all the packet-based cumulative footing rotations by the end of the current packet. Column is optional.	Floating	Optional
	109	Cum. Res. Ftg. Rotation [rad]	Magnitude of the cumulative residual resultant footing rotation.	Floating	High Priority
Results - Sliding	110	Norm. Pk. Ftg. Sliding	Magnitude of the peak footing sliding in the primary loading direction normalized by the footing length, relative to before packet.	Floating	High Priority
	111	Norm. Res. Ftg. Sliding	Magnitude of the cumulative residual footing sliding in the primary loading direction, normalized by the footing length.	Floating	High Priority
Results - Settlement & Moment	112	Norm. Cumm. Res. Ftg. Uplift/Sett. [%]	Cumulative residual footing uplift (-) or settlement (+), measured at the base centroid of the footing relative the before-loading-sequence geometry, normalized by footing length. Residual settlement is defined as the settlement at the last instance of zero rotation.	Floating	High Priority
	113	Norm. Incr. Res. Ftg. Uplift/Sett. [%]	Incremental residual footing uplift (-) or settlement (+), measured at the base centroid of the footing relative the before-packet geometry, normalized by footing length. This value is measured either at the point of zero-shear or the local minima.	Floating	High Priority
	114	Method for determining the residual	Either at the point of zero-shear or at the local minimum.	URL	Required
	115	Norm. Max. Ftg. Moment	Maximum footing moment demand normalized by the static rocking moment capacity (M_c_foot).	Floating	High Priority
	116	Norm. Cumm. Res. Ftg. Uplift/Sett. [%]	Normalized cummulative residual footing uplift or settlement (at point of zero-shear).		
	117	Norm. Incr. Res. Ftg. Uplift/Sett.[%]	Normalized incremental residual footing uplift or settlement (at point of zero-shear).	Floating	High Priority
Misc.	118	Reference	Data report or other publications specific to the test series.	File(s)	Required
	119	Project Website	Link to the project website.	URL	Optional
	120	Comments	Important comments not covered previously.	Text	Required