Supplementary Material

Appendix to:

Design-oriented axial stress–strain model for partially fiber-reinforced-polymer-confined normal-strength concrete

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Nomenclature

The following symbols are used in this paper:

AAE = average absolute error

AVE = average value

A_c = gross cross-sectional area of concrete core

A_e = cross-sectional area of effective confinement zone of concrete core

D = diameter of the circular concrete specimen

E_1 = slope of the first linear branch on the axial stress-strain curves of FRP confined circular concrete column

E_2 = slope of the post-peak linear branch on the Type 1 stress-strain curves of FRP confined circular concrete column

E_3 = slope of the post-peak linear branch on the Type 2 stress-strain curves of FRP confined circular concrete column

E_c = elastic modulus of concrete

E_{frp} = elastic modulus of FRP material

E_t, α_1, β_1, λ_1 = coefficients in Eq. (8)

E_p, α_2, β_2, λ_2 = coefficients in Eq. (9)

f_{cc}' = peak axial stress of axial stress-strain curves for FRP confined concrete

f_{co}' = peak axial stress of axial stress-strain curves for unconfined concrete

f_{cu}' = ultimate axial stress of axial stress-strain curves for FRP confined concrete

f_l = maximum confining pressure of FRP jacket in fully wrapped column

f_l' = maximum confining pressure of FRP jacket in partially wrapped column

$f_{l,a}$ = actual maximum confining pressure of FRP jacket in fully wrapped column

$f_{l,a}'$ = actual maximum confining pressure of FRP jacket in partially wrapped column

f_o' = 70% of the peak axial stress of unconfined concrete

f_t' = axial stress of transition point on axial stress-strain curves for FRP confined concrete

H = height of tested specimen

k_v = longitudinal effective confinement coefficient

MSE = mean square error

N = total number of test data in the database

n = number of FRP layers

SD = standard deviation

s = clear spacing between two adjacent FRP strips

t_{frp} = nominal thickness of FRP sheet per layer

w = width of FRP strips

ε_c = axial strain corresponding to the axial stress on the axial stress-strain curves of FRP confined concrete

ε_{cc} = axial strain corresponding to the peak axial stress of axial stress-strain curves for FRP confined concrete

ε_{co} = axial strain corresponding to the peak axial stress of axial stress-strain curves for unconfined concrete

ε_{cu} = axial strain corresponding to the ultimate axial stress of axial stress-strain curves for FRP confined concrete

ε_{frp} = ultimate tensile strain of FRP material from flat coupon test

$\varepsilon_{h,rup}$ = hoop rupture strain of FRP jacket

ε_{ln} = axial strain corresponding to the end point of the first linear branch of axial stress-strain curves

ε_o = axial strain corresponding to the f_o' for FRP confined concrete

ε_t = axial strain corresponding to the transition point of axial stress-strain curves for FRP confined concrete

ρ_f = FRP volumetric ratio of fully wrapped column

ρ_f' = FRP volumetric ratio of partially wrapped column

ρ_K' = confinement stiffness ratio

ρ_ε = strain ratio

σ_c = axial stress on the axial stress-strain curves of FRP confined concrete

Table s1. Test database of partially FRP-confined circular normal-strength concrete specimens for modeling

Source	Specimen ID	Dimensions				Concrete	FRP						Test results					Post-peak behavior[d]
		H (mm)	D (mm)	w (mm)	s (mm)	f_{co}' (MPa)	Type[a]	f_{frp}	ε_{frp}	E_{frp} (GPa)	n (ply)	t_{frp} (mm/ply)	f_{cc}'	ε_{cc}	f_x' [b]	ε_x [b]	$\varepsilon_{h,rup}$ [c]	
Barros and Ferreira (2008)	M-1	300	150	15.0	85.0	23.0	C	3250	0.0146	230	1	0.176	29.90	0.0040	19.55	0.0067	0.0045	T2-2
	M-2	300	150	15.0	85.0	23.0	C	3250	0.0146	230	2	0.176	30.36	0.0041	19.55	0.0083	0.0040	T2-2
	M-3	300	150	15.0	85.0	23.0	C	3250	0.0146	230	6	0.176	31.05	0.0042	24.03	0.0217	0.0080	T2-1
	M-4	300	150	15.0	45.0	23.0	C	3250	0.0146	230	2	0.176	28.29	0.0077	29.53	0.0038	0.0080	T1
	M-5	300	150	15.0	45.0	23.0	C	3250	0.0146	230	3	0.176	31.74	0.0086	30.11	0.0039	0.0080	T1
	M-6	300	150	15.0	45.0	23.0	C	3250	0.0146	230	4	0.176	34.27	0.0100	30.59	0.0051	0.0080	T1
	M-7	300	150	15.0	45.0	23.0	C	3250	0.0146	230	6	0.176	37.49	0.0120	31.40	0.0054	0.0080	T1
	M-8	300	150	30.0	70.0	23.0	C	3250	0.0146	230	7	0.176	42.09	0.0238	38.54	0.0106	0.0075	T1
	M-9	300	150	30.0	45.0	23.0	C	3250	0.0146	230	5	0.176	43.09	0.0206	40.20	0.0096	0.0100	T1
	M-10	300	150	45.0	30.0	23.0	C	3250	0.0146	230	5	0.176	71.53	0.0275	67.81	0.0129	0.0077	T1
	M-11	300	150	60.0	40.0	23.0	C	3250	0.0146	230	3	0.176	66.47	0.0270	51.17	0.0100	0.0120	T1
	M-12	300	150	60.0	40.0	23.0	C	3250	0.0146	230	7	0.176	83.03	0.0285	65.77	0.0139	0.0064	T1
	M-13	300	150	45.0	30.0	16.0	C	3539	0.0153	232	3	0.113	26.56	0.0122	19.93	0.0057	0.0077	T1
	M-14	300	150	45.0	30.0	16.0	C	3539	0.0153	232	5	0.113	33.44	0.0173	24.16	0.0087	0.0075	T1
	M-15	300	150	60.0	40.0	16.0	C	3539	0.0153	232	3	0.113	26.24	0.0131	19.83	0.0061	0.0064	T1
	M-16	300	150	45.0	30.0	16.0	C	3250	0.0146	230	3	0.176	50.72	0.0293	35.69	0.0141	0.0080	T1
	M-17	300	150	45.0	30.0	16.0	C	3250	0.0146	230	5	0.176	63.36	0.0384	41.27	0.0171	0.0086	T1
	M-18	300	150	60.0	40.0	16.0	C	3250	0.0146	230	3	0.176	41.92	0.0292	33.55	0.0145	0.0102	T1
	M-19	300	150	45.0	30.0	23.0	C	3539	0.0153	232	3	0.113	31.51	0.0079	27.06	0.0037	0.0067	T1
	M-20	300	150	45.0	30.0	23.0	C	3539	0.0153	232	5	0.113	41.63	0.0114	32.00	0.0052	0.0073	T1
	M-21	300	150	60.0	40.0	23.0	C	3539	0.0153	232	3	0.113	31.74	0.0080	28.24	0.0042	0.0079	T1
	M-22	300	150	60.0	40.0	23.0	C	3539	0.0153	232	5	0.113	36.80	0.0106	30.29	0.0047	0.0078	T1
	M-23	300	150	45.0	30.0	23.0	C	3250	0.0146	230	3	0.176	42.32	0.0181	33.88	0.0087	0.0070	T1
	M-24	300	150	45.0	30.0	23.0	C	3250	0.0146	230	5	0.176	53.59	0.0211	40.00	0.0097	0.0063	T1
	M-25	300	150	60.0	40.0	23.0	C	3250	0.0146	230	5	0.176	45.54	0.0209	36.88	0.0107	0.0060	T1
Pham et al. (2015)	M-26	300	150	25.0	25.0	52.0	C	2157	0.0162	133	4	0.450	86.00	0.0158	66.86	0.0062	0.0118	T1
	M-27	300	150	25.0	25.0	52.0	C	2157	0.0162	133	4	0.450	95.00	0.0205	75.54	0.0087	0.0095	T1
	M-28	300	150	25.0	25.0	52.0	C	2157	0.0162	133	4	0.450	96.00	0.0212	74.72	0.0091	0.0142	T1

	M-29	300	150	25.0	25.0	52.0	C	2157	0.0162	133	6	0.450	113.00	0.0320	86.33	0.0140	0.0121	T1
	M-30	300	150	25.0	25.0	52.0	C	2157	0.0162	133	6	0.450	118.00	0.0325	87.94	0.0135	0.0129	T1
Wang (2010)	M-31	400	200	30.0	30.0	35.4	C	4330	0.0170	237	1	0.167	41.40	0.0057	40.01	0.0030	0.0059	T1
	M-32	400	200	30.0	30.0	35.4	C	4330	0.0170	237	2	0.167	55.10	0.0053	/[e]	/[e]	0.0112	T1
	M-33	400	200	30.0	30.0	35.4	C	4330	0.0170	237	3	0.167	71.70	0.0068	/[e]	/[e]	0.0123	T1
	M-34	400	200	40.0	40.0	35.4	C	4330	0.0170	237	2	0.167	55.25	0.0114	45.22	0.0052	0.0118	T1
	M-35	400	200	50.0	30.0	35.4	C	4330	0.0170	237	2	0.167	60.35	0.0030	/[e]	/[e]	0.0105	T1
	M-36	400	200	60.0	90.0	35.4	C	4330	0.0170	237	2	0.167	42.60	0.0033	40.90	0.0018	0.0103	T1
	M-37	400	200	70.0	80.0	35.4	C	4330	0.0170	237	2	0.167	46.97	0.0029	44.65	0.0018	0.0116	T1
Wang et al.	M-38	200	100	87.5	25.0	32.0	C	1674	0.0160	105	4	0.167	110.10	0.0252	89.67	0.0130	0.0120	T1
(2018)	M-39	200	100	87.5	25.0	32.0	C	1674	0.0160	105	4	0.167	105.00	0.0230	81.36	0.0120	0.0121	T1
Wu et al. (2009)	M-40	300	100	50.0	50.0	46.4	A	2060	0.0177	118	2	0.286	60.61	0.0088	57.62	0.0053	0.0151	T1
	M-41	300	100	50.0	50.0	46.4	A	2060	0.0177	118	3	0.286	74.85	0.0094	66.23	0.0042	0.0151	T1
Zeng et al.	M-42	300	150	25.0	112.5	23.4	C	4478	0.0166	249	1	0.167	25.70	0.0039	21.27	0.0116	0.0107	T2-2
(2018a)	M-43	300	150	25.0	112.5	23.4	C	4478	0.0166	249	1	0.167	25.38	0.0035	19.38	0.0140	0.0122	T2-2
	M-44	300	150	30.0	105.0	23.4	C	4478	0.0166	249	1	0.167	25.48	0.0060	22.12	0.0135	0.0098	T2-2
	M-45	300	150	30.0	105.0	23.4	C	4478	0.0166	249	1	0.167	25.26	0.0047	22.03	0.0097	0.0110	T2-2
	M-46	300	150	35.0	97.5	23.4	C	4478	0.0166	249	1	0.167	25.21	0.0039	21.24	0.0160	0.0138	T2-2
	M-47	300	150	35.0	97.5	23.4	C	4478	0.0166	249	1	0.167	26.60	0.0034	24.63	0.0142	0.0115	T2-1
	M-48	300	150	25.0	112.5	23.4	C	4478	0.0166	249	2	0.167	27.43	0.0034	22.34	0.0134	0.0109	T2-2
	M-49	300	150	25.0	112.5	23.4	C	4478	0.0166	249	2	0.167	26.89	0.0057	20.20	0.0124	0.0115	T2-2
	M-50	300	150	30.0	105.0	23.4	C	4478	0.0166	249	2	0.167	29.54	0.0058	23.37	0.0165	0.0126	T2-2
	M-51	300	150	30.0	105.0	23.4	C	4478	0.0166	249	2	0.167	30.14	0.0070	23.18	0.0178	0.0145	T2-2
	M-52	300	150	35.0	97.5	23.4	C	4478	0.0166	249	2	0.167	29.23	0.0099	24.27	0.0224	0.0126	T2-1
	M-53	300	150	30.0	105.0	23.4	C	4478	0.0166	249	3	0.167	27.93	0.0085	22.93	0.0200	0.0110	T2-2
	M-54	300	150	30.0	105.0	23.4	C	4478	0.0166	249	3	0.167	29.28	0.0085	24.15	0.0282	0.0106	T2-1
	M-55	300	150	35.0	97.5	23.4	C	4478	0.0166	249	3	0.167	33.37	0.0074	25.20	0.0154	0.0093	T2-1
	M-56	300	150	35.0	97.5	23.4	C	4478	0.0166	249	3	0.167	32.23	0.0062	27.30	0.0207	0.0084	T2-1
	M-57	300	150	25.0	66.0	23.4	C	4478	0.0166	249	1	0.167	27.55	0.0092	25.94	0.0040	0.0109	T1
	M-58	300	150	25.0	66.0	23.4	C	4478	0.0166	249	1	0.167	26.41	0.0092	25.46	0.0045	0.0115	T1
	M-59	300	150	30.0	60.0	23.4	C	4478	0.0166	249	1	0.167	28.73	0.0132	28.72	0.0057	0.0128	T1
	M-60	300	150	30.0	60.0	23.4	C	4478	0.0166	249	1	0.167	29.06	0.0099	29.82	0.0041	0.0104	T1

M-61	300	150	35.0	54.0	23.4	C	4478	0.0166	249	1	0.167	32.60	0.0099	30.92	0.0041	0.0111	T1
M-62	300	150	35.0	54.0	23.4	C	4478	0.0166	249	1	0.167	33.36	0.0117	31.40	0.0050	0.0118	T1
M-63	300	150	25.0	66.0	23.4	C	4478	0.0166	249	2	0.167	30.64	0.0098	28.52	0.0042	0.0132	T1
M-64	300	150	25.0	66.0	23.4	C	4478	0.0166	249	2	0.167	34.54	0.0106	33.02	0.0044	0.0112	T1
M-65	300	150	30.0	60.0	23.4	C	4478	0.0166	249	2	0.167	35.65	0.0142	32.08	0.0070	0.0109	T1
M-66	300	150	30.0	60.0	23.4	C	4478	0.0166	249	2	0.167	35.95	0.0154	30.95	0.0079	0.0107	T1
M-67	300	150	35.0	54.0	23.4	C	4478	0.0166	249	2	0.167	40.14	0.0207	33.61	0.0092	0.0111	T1
M-68	300	150	35.0	54.0	23.4	C	4478	0.0166	249	2	0.167	40.19	0.0161	34.89	0.0070	0.0110	T1
M-69	300	150	25.0	66.0	23.4	C	4478	0.0166	249	3	0.167	35.52	0.0193	33.01	0.0089	0.0139	T1
M-70	300	150	25.0	66.0	23.4	C	4478	0.0166	249	3	0.167	35.25	0.0248	33.42	0.0110	0.0116	T1
M-71	300	150	30.0	60.0	23.4	C	4478	0.0166	249	3	0.167	41.04	0.0328	36.36	0.0141	0.0162	T1
M-72	300	150	30.0	60.0	23.4	C	4478	0.0166	249	3	0.167	40.38	0.0280	34.41	0.0120	0.0139	T1
M-73	300	150	35.0	54.0	23.4	C	4478	0.0166	249	3	0.167	48.64	0.0397	42.04	0.0140	0.0154	T1
M-74	300	150	35.0	54.0	23.4	C	4478	0.0166	249	3	0.167	45.00	0.0448	39.48	0.0180	0.0164	T1
M-75	300	150	25.0	43.5	23.4	C	4478	0.0166	249	1	0.167	31.09	0.0187	28.36	0.0090	0.0106	T1
M-76	300	150	25.0	43.5	23.4	C	4478	0.0166	249	1	0.167	28.88	0.0177	26.47	0.0088	0.0110	T1
M-77	300	150	30.0	37.5	23.4	C	4478	0.0166	249	1	0.167	35.41	0.0228	32.30	0.0108	0.0126	T1
M-78	300	150	30.0	37.5	23.4	C	4478	0.0166	249	1	0.167	36.22	0.0224	32.58	0.0090	0.0138	T1
M-79	300	150	35.0	31.5	23.4	C	4478	0.0166	249	1	0.167	38.53	0.0232	33.53	0.0110	0.0156	T1
M-80	300	150	35.0	31.5	23.4	C	4478	0.0166	249	1	0.167	38.51	0.0232	34.84	0.0140	0.0133	T1
M-81	300	150	25.0	43.5	23.4	C	4478	0.0166	249	2	0.167	42.49	0.0365	36.77	0.0170	0.0137	T1
M-82	300	150	25.0	43.5	23.4	C	4478	0.0166	249	2	0.167	41.99	0.0304	38.85	0.0160	0.0144	T1
M-83	300	150	30.0	37.5	23.4	C	4478	0.0166	249	2	0.167	42.03	0.0238	34.94	0.0110	0.0120	T1
M-84	300	150	30.0	37.5	23.4	C	4478	0.0166	249	2	0.167	47.53	0.0331	39.49	0.0150	0.0136	T1
M-85	300	150	35.0	31.5	23.4	C	4478	0.0166	249	2	0.167	51.62	0.0287	40.11	0.0130	0.0143	T1
M-86	300	150	35.0	31.5	23.4	C	4478	0.0166	249	2	0.167	52.03	0.0323	41.27	0.0150	0.0168	T1
M-87	300	150	25.0	43.5	23.4	C	4478	0.0166	249	3	0.167	47.98	0.0507	48.68	0.0270	0.0134	T1
M-88	300	150	25.0	43.5	23.4	C	4478	0.0166	249	3	0.167	46.83	0.0541	43.48	0.0240	0.0148	T1
M-89	300	150	30.0	37.5	23.4	C	4478	0.0166	249	3	0.167	58.80	0.0381	47.01	0.0170	0.0140	T1
M-90	300	150	30.0	37.5	23.4	C	4478	0.0166	249	3	0.167	59.63	0.0365	47.79	0.0160	0.0137	T1
M-91	300	150	35.0	31.5	23.4	C	4478	0.0166	249	3	0.167	64.74	0.0422	50.51	0.0200	0.0157	T1
M-92	300	150	35.0	31.5	23.4	C	4478	0.0166	249	3	0.167	63.17	0.0369	46.83	0.0180	0.0141	T1

Zeng et al. (2018b)	M-93	300	150	35.0	97.5	23.5	C	4478	0.0166	249	1	0.167	24.30	0.0029	23.00	0.0119	0.0103	T2-2
	M-94	300	150	25.0	66.7	23.5	C	4478	0.0166	249	1	0.167	24.50	0.0103	23.73	0.0048	0.0099	T1
	M-95	300	150	30.0	60.0	23.5	C	4478	0.0166	249	2	0.167	33.20	0.0116	27.80	0.0052	0.0072	T1
	M-96	300	150	35.0	53.3	23.5	C	4478	0.0166	249	1	0.167	30.50	0.0169	27.96	0.0082	0.0141	T1
	M-97	300	150	25.0	43.8	23.5	C	4478	0.0166	249	1	0.167	29.80	0.0186	27.73	0.0092	0.0179	T1
	M-98	300	150	30.0	37.5	23.5	C	4478	0.0166	249	1	0.167	33.50	0.0197	32.68	0.0110	0.0145	T1
	M-99	300	150	35.0	31.3	23.5	C	4478	0.0166	249	1	0.167	36.70	0.0188	32.21	0.0090	0.0184	T1
	M-100	300	150	30.0	37.5	23.5	C	4478	0.0166	249	2	0.167	42.40	0.0247	34.98	0.0110	0.0164	T1

Note: (a) A=AFRP, C=CFRP; (b) The value, f_x' and ε_x , represent f_t' and ε_t for the Type1 stress-strain relationship and stand for f_{cu}' and ε_{cu} for the Type2 stress-strain relationship, respectively; (c) If the value, $\varepsilon_{h,rup}$, is not given in the literature, the equation, $\varepsilon_{h,rup} = k_\varepsilon \varepsilon_{frp}$, would be used according to Lam and Teng (2003); (d) T1, T2-1, T2-2 stand for the Type1, Type2-1 and Type2-2 stress-strain relationship, respectively; (e) For the stress-strain curves in the corresponding paper are not consistent with the overall trend of Type1, the values at transition point are not given.

Table s2. Test results of partially FRP-confined circular normal-strength concrete specimens for model verification

Source	Specimen ID	s/D	$f_{l,a}'/f_{co}'$	Test results					Post-peak behavior
				f_{cc}'	ε_{cc}	f_{cu}'	ε_{cu}	$\varepsilon_{h,rup}$	
Chen (2017)	V-1	0.75	0.018	26.29	0.0036	21.35	0.0116	0.0107	T2-2
	V-2	0.75	0.021	25.81	0.0036	19.09	0.0147	0.0125	T2-2
	V-3	0.75	0.037	27.66	0.0035	22.00	0.0134	0.0109	T2-2
	V-4	0.75	0.042	26.97	0.0057	21.15	0.0120	0.0124	T2-2
	V-5	0.75	0.060	29.99	0.0080	20.31	0.0286	0.0119	T2-2
	V-6	0.75	0.059	28.44	0.0110	24.16	0.0214	0.0116	T2-1
	V-7	0.44	0.046	26.78	0.0094	/	/	0.0118	T1
	V-8	0.44	0.046	27.95	0.0095	/	/	0.0117	T1
	V-9	0.44	0.107	31.16	0.0121	/	/	0.0137	T1
	V-10	0.44	0.093	35.35	0.0133	/	/	0.0119	T1
	V-11	0.44	0.145	36.23	0.0203	/	/	0.0123	T1
	V-12	0.44	0.127	36.52	0.0277	/	/	0.0108	T1
	V-13	0.29	0.067	31.45	0.0193	/	/	0.0106	T1
	V-14	0.29	0.076	29.12	0.0181	/	/	0.0120	T1
	V-15	0.29	0.174	42.85	0.0364	/	/	0.0138	T1
	V-16	0.29	0.182	42.56	0.0301	/	/	0.0144	T1
	V-17	0.29	0.259	48.98	0.0328	/	/	0.0137	T1
	V-18	0.29	0.289	49.18	0.0387	/	/	0.0153	T1
	V-19	0.70	0.026	25.90	0.0050	21.50	0.0098	0.0115	T2-2
	V-20	0.70	0.026	25.61	0.0051	22.10	0.0143	0.0115	T2-2
	V-21	0.70	0.057	29.90	0.0059	26.77	0.0158	0.0127	T2-1
	V-22	0.70	0.065	30.58	0.0072	26.24	0.0162	0.0146	T2-1
	V-23	0.70	0.061	28.14	0.0088	24.49	0.0181	0.0091	T2-1
	V-24	0.70	0.075	29.60	0.0090	24.93	0.0256	0.0112	T2-1
	V-25	0.40	0.065	29.21	0.0132	/	/	0.0128	T1
	V-26	0.40	0.056	30.68	0.0092	/	/	0.0111	T1
	V-27	0.40	0.119	36.52	0.0142	/	/	0.0117	T1
	V-28	0.40	0.247	40.87	0.0328	/	/	0.0162	T1
	V-29	0.40	0.221	40.90	0.0296	/	/	0.0145	T1

	V-30	0.25	0.097	36.42	0.0208	/	/	0.0120	T1
	V-31	0.25	0.112	36.52	0.0226	/	/	0.0138	T1
	V-32	0.25	0.196	42.65	0.0241	/	/	0.0121	T1
	V-33	0.25	0.230	47.81	0.0331	/	/	0.0142	T1
	V-34	0.25	0.386	59.21	0.0381	/	/	0.0159	T1
	V-35	0.25	0.376	59.50	0.0365	/	/	0.0155	T1
	V-36	0.65	0.039	25.12	0.0042	21.18	0.0160	0.0135	T2-2
	V-37	0.65	0.033	27.66	0.0041	24.22	0.0142	0.0115	T2-1
	V-38	0.65	0.067	29.31	0.0102	24.20	0.0221	0.0117	T2-1
	V-39	0.65	0.062	29.60	0.0091	22.45	0.0197	0.0108	T2-2
	V-40	0.65	0.081	33.40	0.0079	30.74	0.0145	0.0094	T2-1
	V-41	0.65	0.070	32.43	0.0065	26.66	0.0213	0.0081	T2-1
	V-42	0.36	0.073	33.21	0.0105	/	/	0.0115	T1
	V-43	0.36	0.075	33.79	0.0129	/	/	0.0118	T1
	V-44	0.36	0.147	40.22	0.0218	/	/	0.0115	T1
	V-45	0.36	0.140	41.58	0.0161	/	/	0.0110	T1
	V-46	0.36	0.256	43.14	0.0482	/	/	0.0134	T1
	V-47	0.36	0.274	46.74	0.0324	/	/	0.0143	T1
	V-48	0.21	0.146	39.15	0.0265	/	/	0.0145	T1
	V-49	0.21	0.135	38.86	0.0232	/	/	0.0134	T1
	V-50	0.21	0.298	51.61	0.0308	/	/	0.0148	T1
	V-51	0.21	0.339	52.39	0.0323	/	/	0.0168	T1
	V-52	0.21	0.505	65.83	0.0420	/	/	0.0167	T1
	V-53	0.21	0.496	63.30	0.0372	/	/	0.0164	T1
Ghanem and Harik (2018)	V-54	0.80	0.032	23.51	0.0076	/	/	0.0117	T1
	V-55	0.60	0.054	26.22	0.0102	/	/	0.0117	T1
	V-56	0.40	0.094	27.81	0.0120	/	/	0.0117	T1
	V-57	0.30	0.128	29.23	0.0126	/	/	0.0117	T1
	V-58	0.25	0.150	33.18	0.0171	/	/	0.0117	T1
	V-59	0.20	0.179	35.24	0.0195	/	/	0.0117	T1
	V-60	0.80	0.013	57.52	0.0065	/	/	0.0117	T1
	V-61	0.60	0.022	58.35	0.0066	/	/	0.0117	T1

	V-62	0.40	0.038	59.86	0.0074	/	/	0.0117	T1
	V-63	0.30	0.051	62.35	0.0098	/	/	0.0117	T1
	V-64	0.25	0.060	63.39	0.0104	/	/	0.0117	T1
	V-65	0.20	0.072	68.06	0.0135	/	/	0.0117	T1
	V-66	0.80	0.029	24.78	0.0070	/	/	0.0117	T1
	V-67	0.60	0.050	26.65	0.0083	/	/	0.0117	T1
	V-68	0.40	0.087	28.80	0.0084	/	/	0.0117	T1
	V-69	0.30	0.118	28.83	0.0106	/	/	0.0117	T1
	V-70	0.25	0.139	32.04	0.0157	/	/	0.0117	T1
	V-71	0.20	0.166	35.99	0.0173	/	/	0.0117	T1
	V-72	0.80	0.032	25.02	0.0072	/	/	0.0117	T1
	V-73	0.60	0.054	26.22	0.0096	/	/	0.0117	T1
	V-74	0.40	0.094	27.31	0.0108	/	/	0.0117	T1
	V-75	0.30	0.127	29.89	0.0122	/	/	0.0117	T1
	V-76	0.25	0.150	32.54	0.0150	/	/	0.0117	T1
	V-77	0.20	0.178	36.16	0.0193	/	/	0.0117	T1
Ni (2018)	V-78	0.25	0.095	55.33	0.0191	/	/	0.0135	T1
	V-79	0.25	0.080	56.34	0.0219	/	/	0.0113	T1
	V-80	0.25	0.191	69.42	0.0298	/	/	0.0135	T1
	V-81	0.25	0.193	72.43	0.0348	/	/	0.0137	T1
	V-82	0.25	0.200	71.76	0.0340	/	/	0.0142	T1
	V-83	0.25	0.326	88.53	0.0473	/	/	0.0154	T1
	V-84	0.25	0.057	42.61	0.0174	/	/	0.0124	T1
	V-85	0.25	0.053	43.21	0.0133	/	/	0.0116	T1
	V-86	0.25	0.135	54.14	0.0256	/	/	0.0148	T1
	V-87	0.25	0.136	53.55	0.0213	/	/	0.0149	T1
	V-88	0.25	0.193	65.18	0.0354	/	/	0.0141	T1
	V-89	0.25	0.178	64.70	0.0391	/	/	0.0130	T1
	V-90	0.25	0.050	37.23	0.0035	35.83	0.0128	0.0144	T2-2
	V-91	0.25	0.055	43.44	0.0032	39.74	0.0131	0.0159	T2-1
	V-92	0.25	0.052	39.81	0.0035	37.52	0.0130	0.0152	T2-1
	V-93	0.25	0.093	44.66	0.0164	/	/	0.0135	T1

V-94	0.25	0.089	44.60	0.0147	/	/	0.0129	T1
V-95	0.25	0.131	53.32	0.0201	/	/	0.0127	T1
V-96	0.25	0.141	57.40	0.0163	/	/	0.0136	T1
V-97	0.25	0.143	55.42	0.0186	/	/	0.0138	T1
V-98	0.25	0.032	35.46	0.0037	26.38	0.0111	0.0126	T2-2
V-99	0.25	0.071	37.86	0.0146	/	/	0.0139	T1
V-100	0.25	0.113	42.69	0.0160	/	/	0.0147	T1

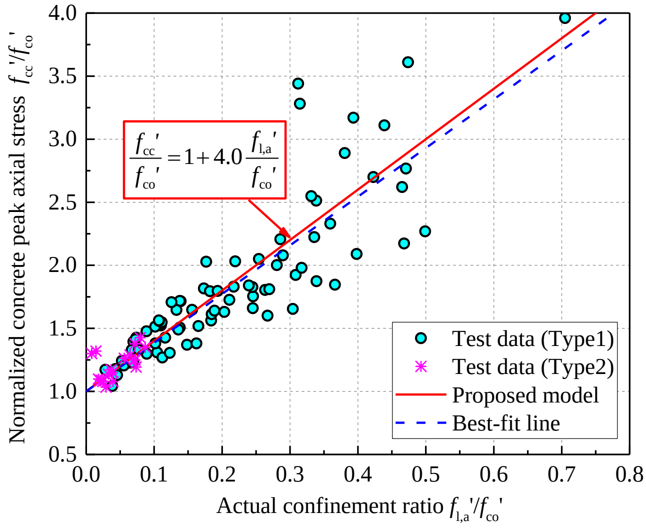


Fig.s1. Axial stress enhancement ratio at peak point

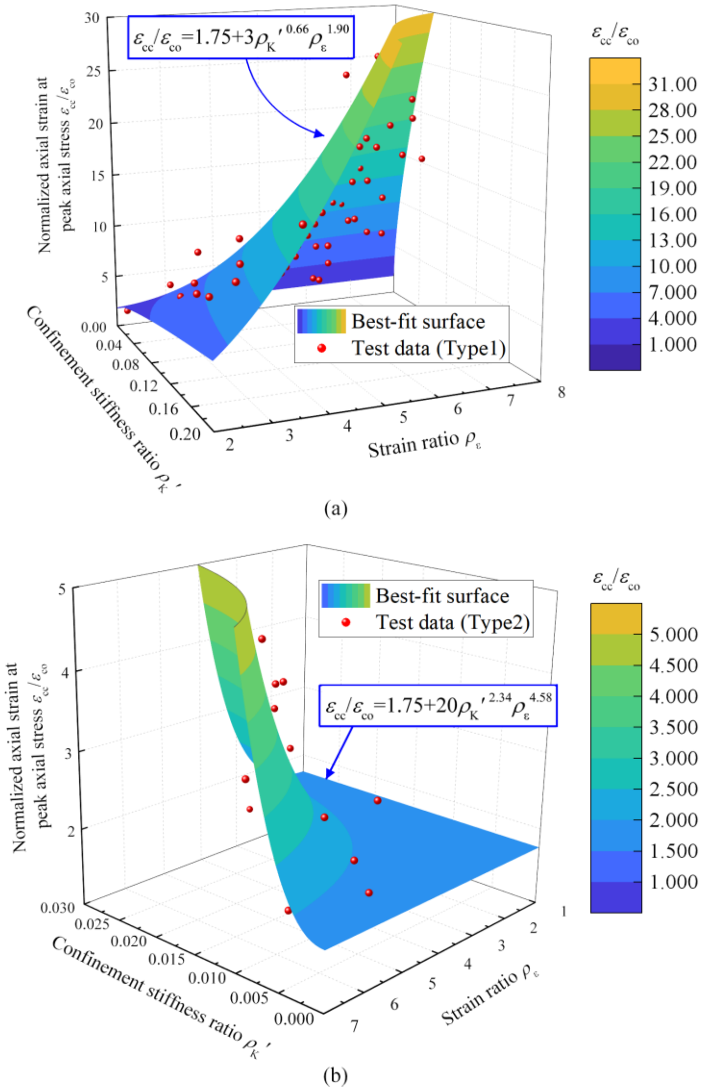
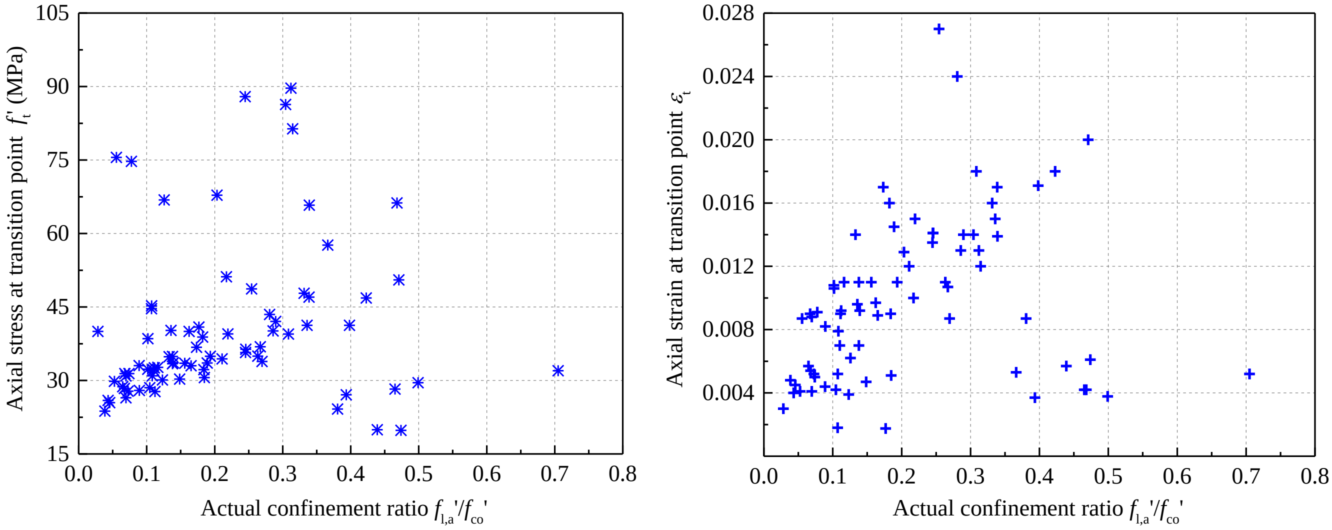
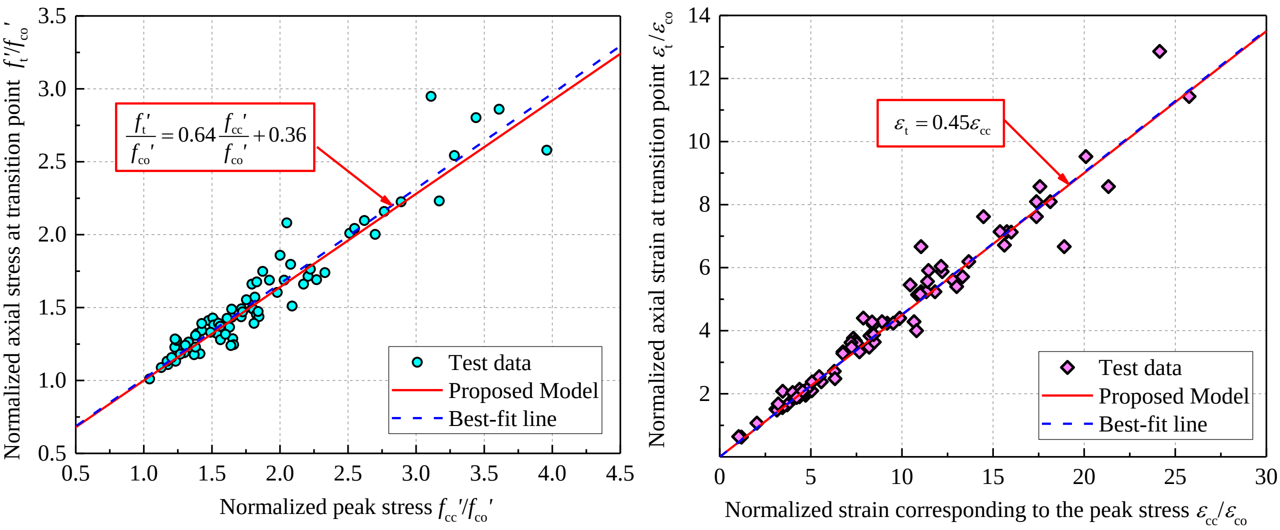


Fig.s2. Axial strain enhancement ratio at peak point



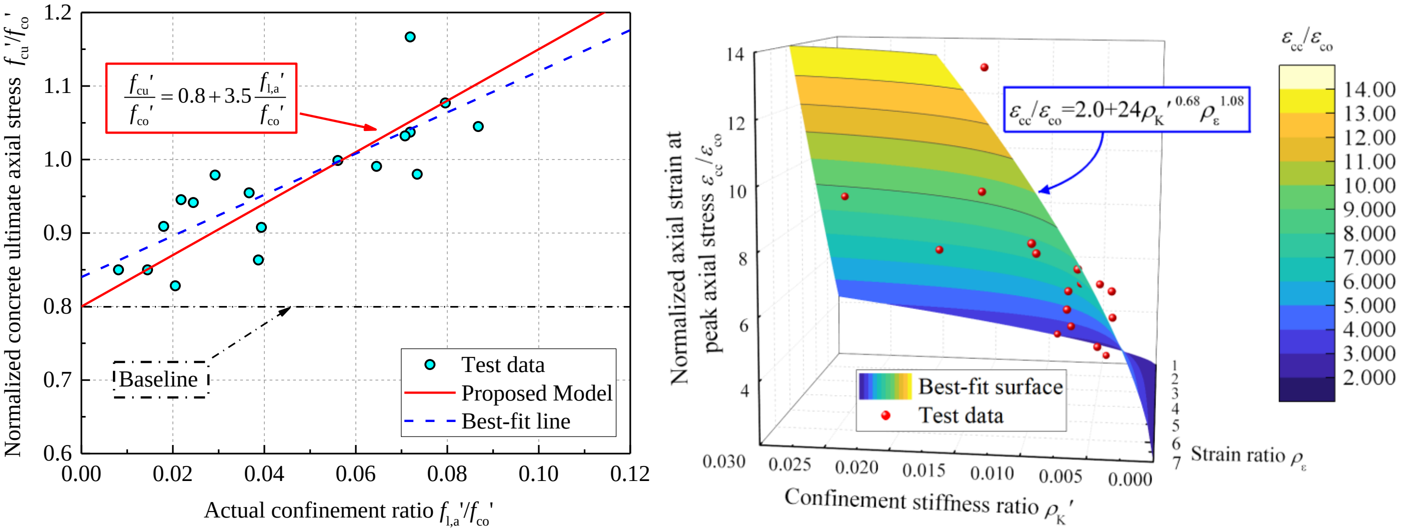
(a) Axial stress (b) Axial strain

Fig.s3. Axial stress and strain at transition point vs. $f_{l,a}'/ f_{co}'$



(a) Axial stress (b) Axial strain

Fig.s4. Axial stress and strain at transition point vs. peak point



(a) Strength enhancement ratio (b) Strain enhancement ratio

Fig.s5. Axial stress and strain enhancement ratio at ultimate point