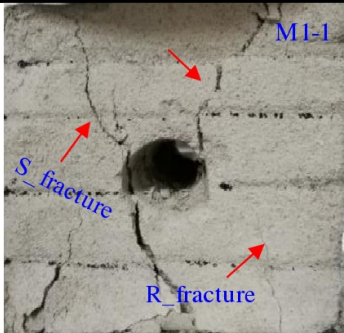
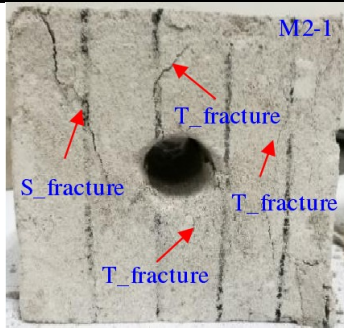
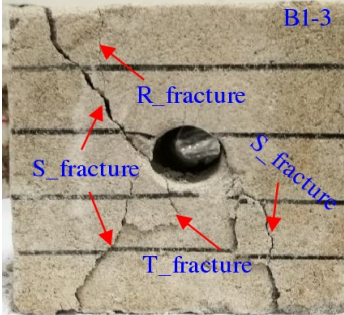
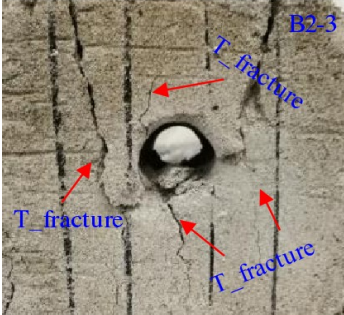


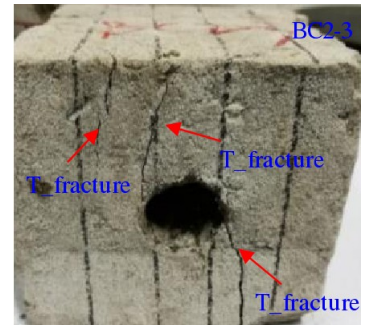
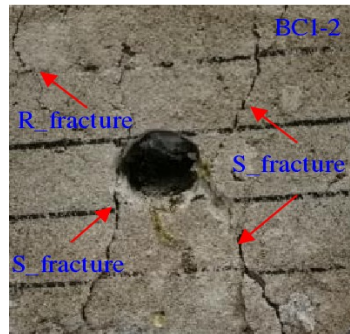
Table 1 The specimen classification of list

support conditions	beddings angles	Specimens ids
rough tunnel (S1)	0°	M1-1~M1~3
	90°	M2-1~M2~3
systematic rock bolt support (S2)	0°	B1-1~M1~3
	90°	B2-1~M2~3
systematic rock bolt and shotcrete support (S3)	0°	BC1-1~M1~3
	90°	BC2-1~M2~3
systematic rock bolt and shotcrete and steel arch support (S4)	0°	BCG1-1~M1~3
	90°	BCG2-1~M2~3
steel pipe support (S5)	0°	P1-1~M1~3
	90°	P2-1~M2~3
steel pipe and shotcrete support (S6)	0°	PC1-1~M1~3
	90°	PC2-1~M2~3
steel pipe and shotcrete and steel arch support (S7)	0°	PCG1-1~M1~3
	90°	PCG2-1~M2~3

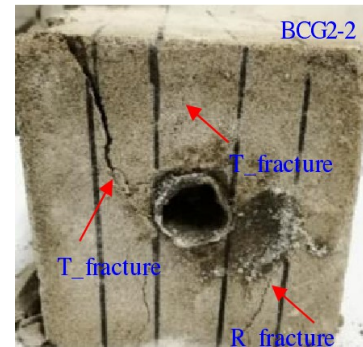
Table 2 Failure mode of reinforced rock with hole

support conditions	a bedding angle of 0°	a bedding angle of 90°
rough tunnel (S1)		
		

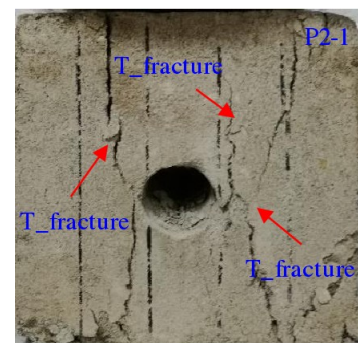
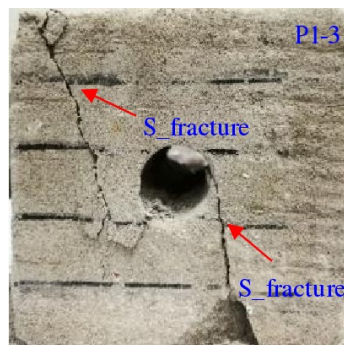
systematic rock bolt and
shotcrete support (S3)



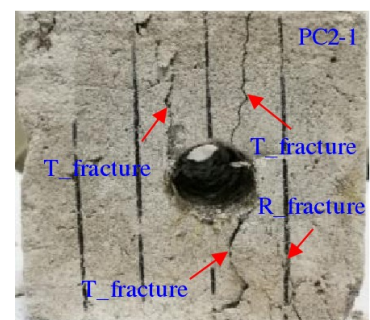
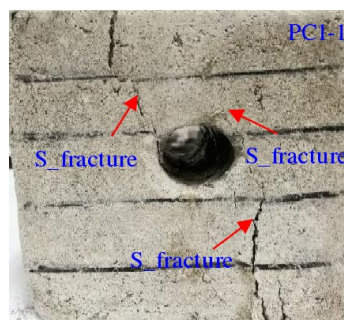
systematic rock bolt and
shotcrete and steel arch support
(S4)



steel pipe support (S5)



steel pipe and shotcrete support
(S6)



steel pipe and shotcrete and
steel arch support (S7)

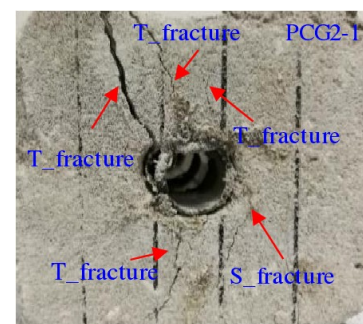
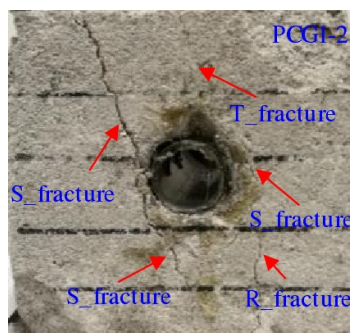
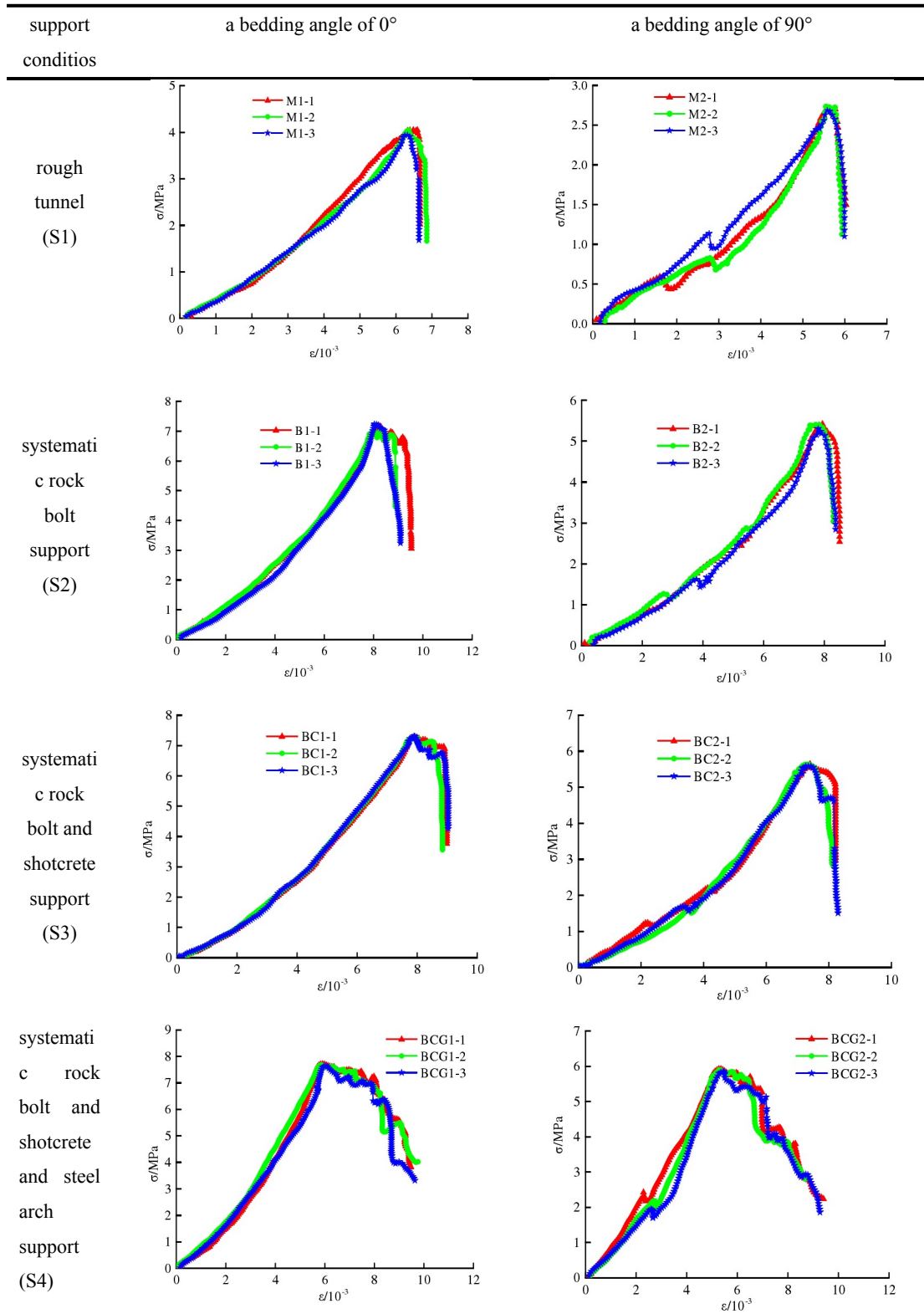
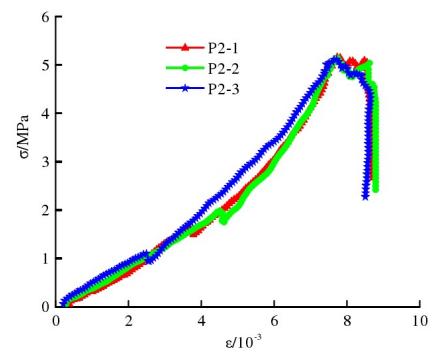
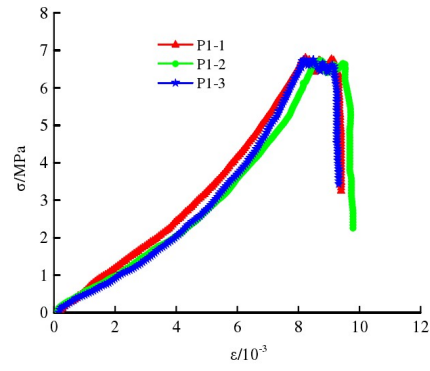


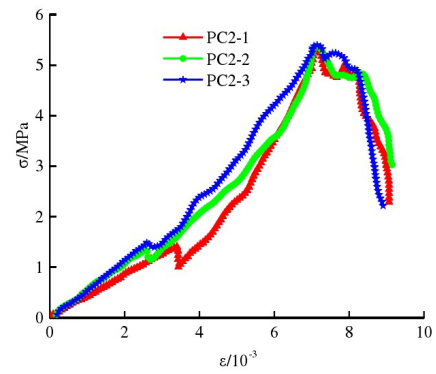
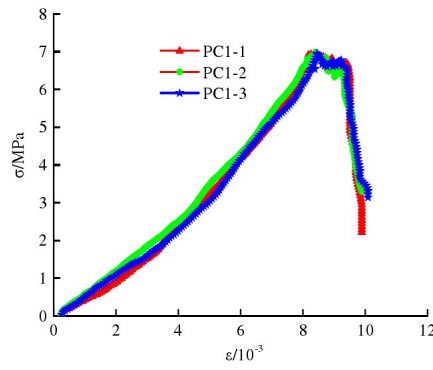
Table 3 Failure mode of reinforced rock with hole



steel pipe
support
(S5)



steel pipe
and
shotcrete
support
(S6)



steel pipe
and
shotcrete
and steel
arch
support
(S7)

