Table N-5
Matrices Used in the Computer-Oriented Direct Stiffness Method
(Chapters 4, 5, and 6)

Matrix	*Definition*
$\mathbf{S}_{Mi}$	Member stiffnesses (for both ends of member i) in directions of member axes
$\mathbf{S}_{Mjj}$	Submatrix jj of $\mathbf{S}_{Mi}$
$\mathbf{S}_{Mjk}$	Submatrix jk of $\mathbf{S}_{Mi}$
$\mathbf{S}_{Mkj}$	Submatrix kj of $\mathbf{S}_{Mi}$
$\mathbf{S}_{Mkk}$	Submatrix kk of $\mathbf{S}_{Mi}$
$\mathbf{S}_{MSi}$	Member stiffnesses (for both ends of member i) in directions of structural axes
$\mathbf{A}_{MSi}$	Fixed-end actions (for both ends of member i) in directions of structural axes
$\mathbf{D}_{MSi}$	Displacements (for both ends of member i) in directions of structural axes
$\mathbf{A}_{E}$	Equivalent joint loads
$\mathbf{A}_{C}$	Combined joint loads
$\mathbf{A}_{FC}$	Combined joint loads corresponding to $\mathbf{D}_{F}$
$\mathbf{A}_{RC}$	Combined joint loads corresponding to $\mathbf{D}_{R}$
$\mathbf{R}_{i}$	Rotation matrix for member i
$\mathbf{R}_{Ti}$	Rotation transformation matrix for member i
$\mathbf{D}_{Ji}$	Joint displacements at ends of member i
$\mathbf{A}_{MDi}$	End-actions (for both ends of member i) in member directions, due to joint displacements
$\mathbf{A}_{RD}$	Support reactions due to joint displacements
$\mathbf{T}_{MLi}$	Transfer matrix for fixed-end actions due to unit values of concentrated loads
$\mathbf{A}_{\ell i}$	Concentrated loads at point ℓ between the ends of member i
$\mathbf{R}_{R}$	Rotation transformation matrix for structure
$\mathbf{A}_{p}$	Actions at point p
$\mathbf{A}_{q}$	Actions at point q
$\mathbf{T}_{pq}$	Translation-of-axes transformation matrix
$\mathbf{D}_{p}$	Displacements at point p
$\mathbf{D}_{q}$	Displacements at point q
$\mathbf{T}_{jk}$	Specialization of $\mathbf{T}_{pq}$ to points j and k
$\mathbf{F}_{Mjj}$	Flexibilities for j end of member i (in member directions)
$\mathbf{F}_{Mkk}$	Flexibilities for k end of member i (in member directions)
$\mathbf{F}_{a\ell\ell}$	Flexibilities for ℓ end of segment $j\ell$ (in member directions)
$\mathbf{F}_{b\ell\ell}$	Flexibilities for ℓ end of segment ℓk (in member directions)
$\mathbf{A}_{MB}$	Actions $\{\mathbf{A}_{p}, \mathbf{A}_{q}\}$ for rigid bodies
$\mathbf{D}_{MB}$	Displacements $\{\mathbf{D}_{p}, \mathbf{D}_{q}\}$ for rigid bodies
$\mathbf{T}$	Combined translation-of-axes operator
$\mathbf{C}$	Constraint matrix for frames
$\mathbf{Q}$	Vector of axial forces in frames

Table N-6
Matrices used in Chapter 7 and Appendix D

Matrix	*Definition*
0	Null matrix
A	Action vector (*also* coefficient matrix)
B	Strain-displacement matrix (*and* vector of constants)
C	Strain-stress matrix
D	Displacement vector
E	Stress-strain matrix
K	Element stiffness matrix
S	Stiffness matrix
T	Transformation matrix
U	Upper triangular matrix
X	Vector of unknowns
Y	Vector of unknowns
Z	Vector of unknowns
b	Vector of body forces for element
d	Linear differential operator for strain-displacement relationships
f	Matrix of displacement shape functions
p	Nodal load vector for element
q	Nodal displacement vector for element
u	Displacement vector for any point on an element