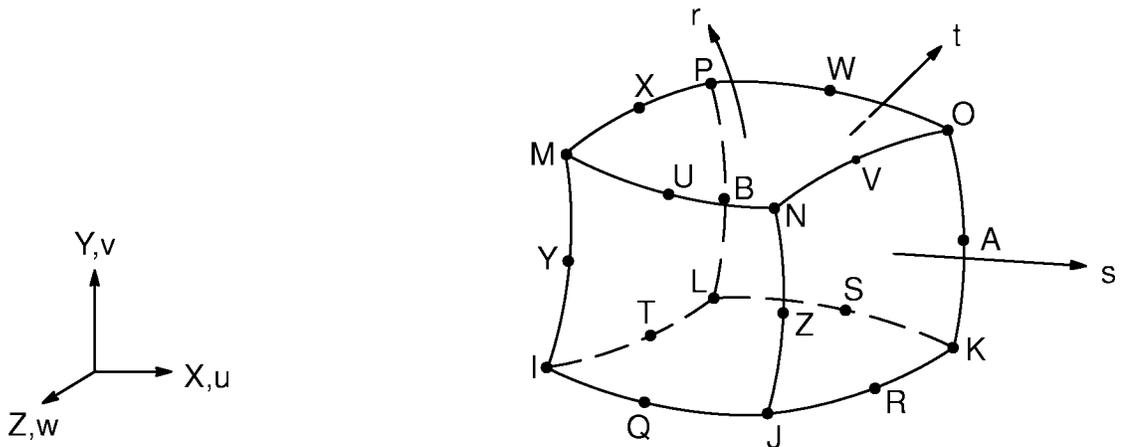


14.95 SOLID95 — 20-Node Structural Solid



Matrix or Vector	Geometry	Shape Functions	Integration Points
Stiffness Matrix	Brick	Equations (12.8.20-1), (12.8.20-2), and (12.8.20-3)	14 if KEYOPT(11)=0 and 2 x 2 x 2 if KEYOPT(11)=1
	Wedge	Equations (12.8.14-1), (12.8.14-2), and (12.8.14-3)	3 x 3
	Pyramid	Equations (12.8.7-1), (12.8.7-2), and (12.8.7-3)	2 x 2 x 2
	Tet	Equations (12.8.2-1), (12.8.2-2), and (12.8.2-3)	4
Mass Matrix	Same as stiffness matrix.		Same as stiffness matrix
Stress Stiffness Matrix	Same as stiffness matrix		Same as stiffness matrix

Matrix or Vector	Geometry	Shape Functions	Integration Points
Thermal Load Vector	Same as stiffness matrix		Same as stiffness matrix
Pressure Load Vector	Quad	Equations (12.5.10–1) and (12.5.10–2)	3 x 3
	Triangle	Equations (12.5.2–1) and (12.5.2–2)	6

Load Type	Distribution
Element Temperature	Same as shape functions thru element
Nodal Temperature	Same as shape functions thru element
Pressure	Bilinear across each face

Reference: Zienkiewicz(39)

14.95.1 Other Applicable Sections

Chapter 2 describes the derivation of structural element matrices and load vectors as well as stress evaluations. Section 13.1 describes integration point locations. If KEYOPT(3)=1, the mass matrix is diagonalized as described in Section 13.2.