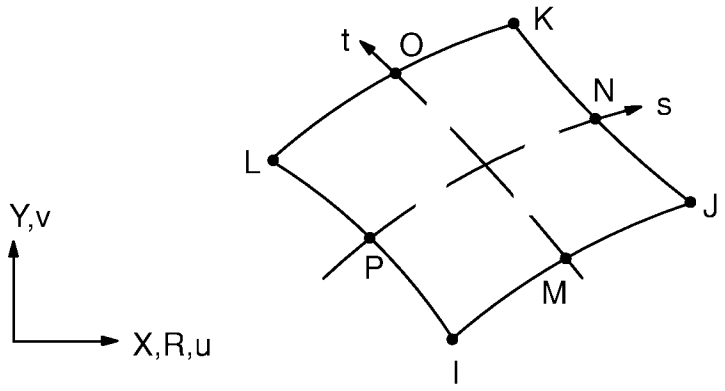
14.82 PLANE82 — 2–D 8–Node Structural Solid



Matrix or Vector	Geometry	Shape Functions	Integration Points
Stiffnesss Matrix	Quad	Equations (12.6.7–1) and (12.6.7–2)	2 x 2
	Triangle	Equations (12.6.2–1) and (12.6.2–2)	3
Mass Matrix	Same as stiffness matrix		Same as stiffness matrix
Stress Stiffness Matrix	Same as stiffness matrix		Same as stiffness matrix
Thermal Load Vector	Same as stiffness matrix		Same as stiffness matrix
Pressure Load Vector	Same as stiffness matrix, specialized to the face		2 along face

Load Type	Distribution
Element Temperature	Same as shape functions across element, constant thru thickness or around circumference
Nodal Temperature	Same as element temperature distribution
Pressure	Linear along each face

Reference: Zienkiewicz(39)

14.82.1 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.

14.82.2 Assumptions and Restrictions

A dropped midside node implies that the face is and remains straight.