

CHAPTER 1

Answers:

1-1 Elastic strain, plastic strain, and strain hardening.

1-2 Cold Formed steel: AISI (American Iron and Steel Institute)
Hot Rolled Steel: AISC (American Institute of Steel Construction)

1-3 Proportional limit: The largest stress for which Hooke's law applies, or the highest point on the linear portion of the stress-strain diagram.

Elastic limit: The largest stress a material can withstand without being permanently deformed.

Yield stress: The stress at which there is a significant increase in the elongation, or strain, without a corresponding increase in stress.

1-4 Plates: A36
W-shapes: A992
C-sections: A36

1-5 Hot Rolled
Cold Formed

1-6 Ductility, Elasticity, permanence, Uniformity, High-Strength/Weight Ratio, Constructability, or Fracture Toughness.

SFC✓

1-1

1-7 A992

1-8 Wrought Iron : Very low carbon content
($\leq 0.15\%$)

Cast Iron : Very high carbon content
($\geq 2.0\%$)

Steel : Carbon content in the range
of 0.15% to 1.7%

1-9 Mild steel carbon range 0.15% to 0.29%

1-10 Corrosion, Fireproofing Costs, Susceptibility
of Buckling, Fatigue, or Brittle Fracture.

1-11. Insufficient size and strength, Details
of Connections, Deflections, Erection
problems, or Foundation settlement.

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1-2