A case history and construction constraints

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5 / 14 Interchange
14/5 North Connector – Abutment 1
Current Bridge Design Specification

AASHTO LRFD Bridge Specifications

Footing size - Controlled by the 3 Limit States
• LRFD - Service Limit State:
  – Footing Size is determined by:
    • Equivalent uniform contact Pressure
    • Allowable Settlement of the Footing
      – Caltrans allows 1 or 2 inches
      – Can increase the Allowable Settlement
• LRFD - Strength Limit State:
  – Footing Size is determined by:
    • Equivalent uniform contact Pressure
      – Structure loadings
      – Load Factors
        » Can Reduce the Load Factors, (\(\gamma\))
    • The Ultimate Soil Bearing Capacity, (\(q_{ult}\))
      – As Footing size, (B) goes down so does – \(q_{ult}\)
      – Increase the Design Resistance Factors, (\(\Phi\))
        » Values currently used are 0.45 and .50
• LRFD - Extreme Limit State:
  – Footing Size is determined by:
    • Load Factors, (γ) are 1
    • Design Resistance Factors, (Φ) are also 1