Rocking Initiative

- SDC Implementation
  - Accepted Mechanism
  - PGA dependent?
  - Allowed on soil and/or pile group?
- Pile to Pile Cap Details
- Geotechnical Specifications

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6.2.1 Foundation Performance

- Bridge foundations shall be designed to respond to seismic loading in accordance with the seismic performance objectives outlined in MTD 20-1
- The capacity of the foundations and their individual components to resist MCE seismic demands shall be based on ultimate structural and soil capacities

6.2.3.1 Foundation Strength

All foundations shall be designed to resist the plastic hinging overstrength capacity of the column or pier wall, M_o defined in Section 4.3.1 and the associated plastic shear V_o.[7] See Section 7.7 for additional foundation design guidelines.

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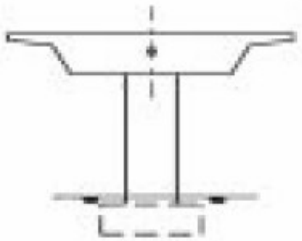
6.2.3 Foundation Design Criteria

6.2.3.1 Foundation Strength

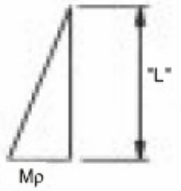
All foundations shall be designed to resist the plastic hinging overstrength capacity of the column or pier wall, M_o defined in Section 4.3.1 and the associated plastic shear V_o.[7] See Section 7.7 for additional foundation design guidelines.

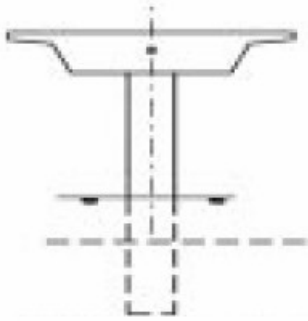
6.2.3.2 Foundation Flexibility

The demand and capacity analyses shall incorporate the expected foundation stiffness if the bridge is sensitive to variations in rotational, vertical, or lateral stiffness.

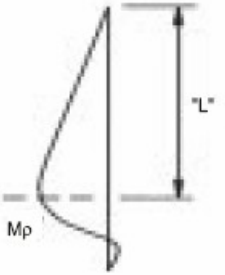


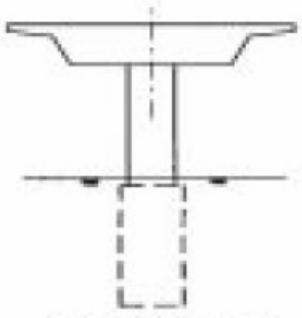
Fixed-Pin Column



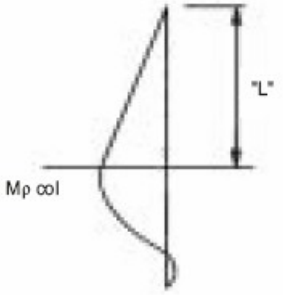


Prismatic Pile Shaft





Enlarged Pile Shaft



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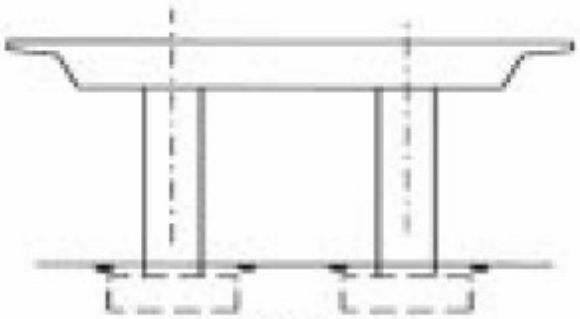
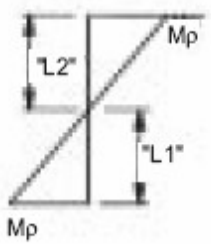
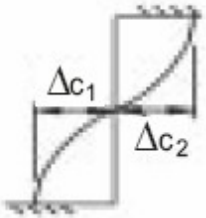
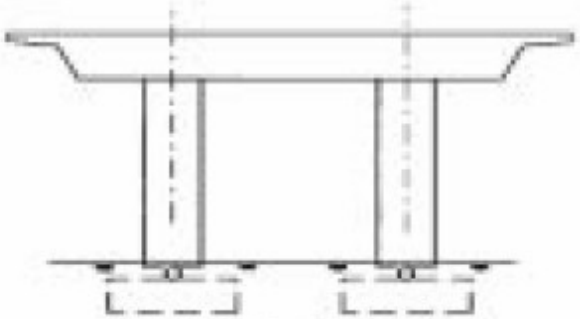


Fixed-Fixed Column

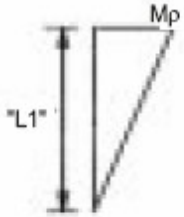




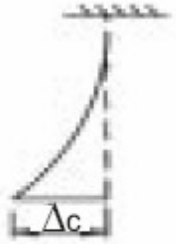


Fixed-Pin Column
Multi-Column Bent

STRUCTURAL CONFIGURATION



MOMENT DIAGRAM



EQUIVALENT LOCAL DUCTILITY MODEL

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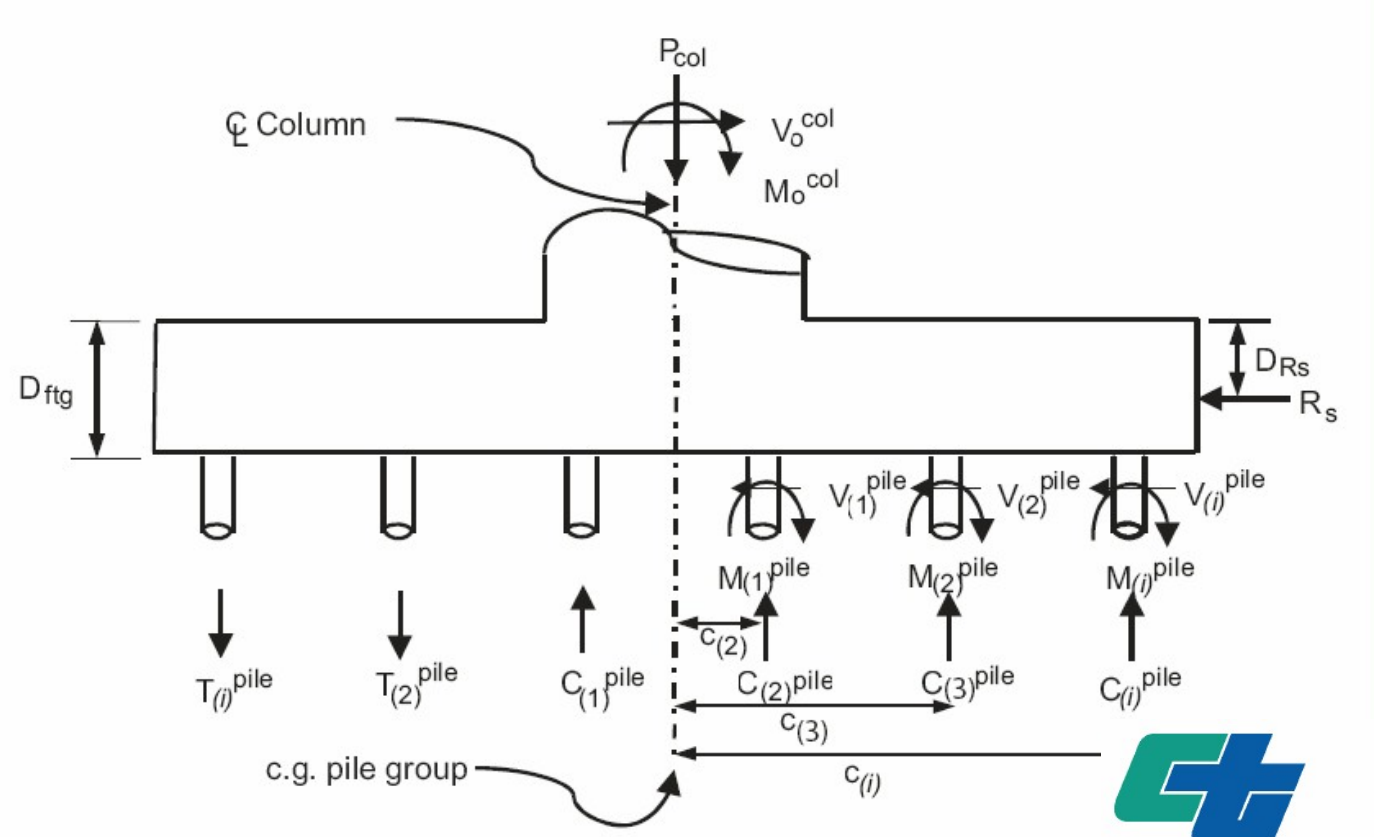
7.7.1.1 Pile Foundations in Competent Soil

The lateral, vertical, and rotational capacity of the foundation shall exceed the respective demands. The size and number of piles and the pile group layout shall be designed to resist service level moments, shears, and axial loads and the moment demand induced by the column plastic hinging mechanism. Equations 7.28 and 7.29 define lateral shear and moment equilibrium in the foundation when the column reaches its overstrength capacity, see Figure 7.11.



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