

Contents

Acknowledgements	ii
Chapter 1	
Introduction	1-1
1.1 General	1-1
Chapter 2	
Loads	1-1
2.1 General	2-1
Chapter 3	
Pile Cap Behavior	3-1
3.1 General	3-1
3.2 Load Case I: Vertical Load $D + L_{floor}$	3-1
3.3 Load Case II: Combined Axial, Shear, and Moment Demand	3-2
Chapter 4	
Dimensioning and Detailing Pile Caps	4-1
4.1 General	4-1
4.2 General Overview of ACI Chapter 15 Provisions as Applied to Pile Caps	4-1
4.3 Other Pile Cap Requirements and Recommendations as Used in this Design Guide	4-5
Chapter 5	
Pile Cap Design for Gravity Loads	5-1
5.1 General	5-1
5.2 Design Provisions for Flexure	5-1
5.3 Design Provisions for Shear	5-2
5.4 Limit State Design Summary for Shear	5-5
5.5 Tabulated Pile Cap Designs for Gravity Loads	5-8
Chapter 6	
Pile Cap Design for Lateral Loads	6-1
6.1 General	6-1
6.2 Pile Cap Analysis Models and Properties	6-1
6.3 Tabulated Pile Cap Designs for Combined Gravity and Lateral Loads	6-3

Chapter 7	
Seismic Design of Pile Caps	7-1
7.1 General	7-1
7.2 Seismic Design of Pile Caps per 2012 IBC Chapter 18	7-1
7.3 Seismic Design of Pile Caps per ACI 318-14 Section 18.13	7-1
Chapter 8	
Design Examples	8-1
8.1 General	8-1
8.2 Design Example #1 – 16 Piles	8-1
8.3 Design Example #2 – 5 Piles	8-8
8.4 Design Example #3 – 6 Piles	8-13
8.5 Design Example #4 – 7 Piles	8-19
8.6 Design Example #5 – 5 Piles (High Load Piling)	8-24
8.7 Design Example #6 – 16 Piles - Axial Plus Lateral Demand	8-29
Chapter 9	
Tabulated Designs	9-1
9.1 General	9-1
9.2 Tabulated Pile Cap Designs for Gravity Loads	9-1
9.3 Tabulated Pile Cap Designs for Combined Gravity and Lateral Loads	9-1
Chapter 10	
Selected References	10-1
Notations	N-1
Tables	T-1
Appendix A – Derivations and Proofs	A-1
Appendix B – Column-to-Pile Cap Connections	B-1
Appendix C – Pile-to-Pile Cap Connections	C-1

This publication is licensed to Hope Furrer, hfurrer@hfurrer.com. Document sharing is prohibited.