BEHAVIOR OF COLD-FORMED STEEL IN MOMENT RESISTING FRAMES

By

Emad Mohammed Shafik Hassan

A Thesis Submitted to the
Faculty of Engineering, Cairo University
In Partial Fulfillment of the
Requirement for the Degree of
MASTER OF SCIENCE
In
STRUCTURAL ENGINEERING

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Title of Thesis:

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Key Words:
Cold-formed steel; Moment frame; Cyclic behavior; Monotonic behavior.

Summary:

The thesis presents an analytical and experimental investigation of the cold-formed steel in moment resisting frames. Three dimensional non-linear finite element analyses have been performed for cold-formed steel beam-to-column connections under both monotonic and cyclic loading. Furthermore, experimental investigation has been conducted for full-scale models to test the real behavior of the connection in question under both monotonic and cyclic loading conditions. Several parameters have been examined: profiles of cold-formed C-sections, profile slenderness, vertical stiffener configurations, and horizontal stiffener configurations. The energy dissipation through both element and connection hysteretic behaviors has been also reported analytically and experimentally.

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Table of Contents

Acknowledgments i
List of Tables v
List of Figures vi
Abstract xviii
CHAPTER 1: Introduction 1
1.1 General 1
1.2 Problem statement 1
1.3 Objective of the research 1
1.4 Scope of the research 2
1.5 Organization of the thesis 2
CHAPTER 2: LITERATURE REVIEW 4
2.1 General 4
2.2 Design Codes 4
2.2.1 Cold-formed steel 4
2.2.2 Beam-to-Column moment connection 8
2.2.3 Cyclic Loading 10
2.2.4 Tensile loading test 11
2.3 Research Works 12
2.3.1 Cold-formed steel 12
2.3.2 Cold formed steel connections 18
CHAPTER 3: Numerical Model and Verification 21
3.1 General 21
3.2 Numerical model 21
3.3 Modeling Procedure 21
3.3.1 Finite Element Modeling 21
3.3.2 Material 23
3.3.3 Model Geometry 24
3.3.4 Loading 30
3.3.5 Evaluation of parameters 31
3.4 Numerical model verification 33

CHAPTER 4: Experimental model and test setup 35
4.1 General 35
4.2 Experimental model 35
4.3 Test specimens. 36
4.3.1 Monotonic loading specimens 37
4.3.2 Cyclic loading specimens 38
4.4 Construction of specimens 39
4.5 Testing setup 41
4.6 Instrumentation 46
4.6.1 Strain gauge (SG) 46
4.6.2 Linear variable displacement transducers (LVDTs) 48
4.6.3 Load cell 50
4.6.4 Data acquisition system 50
4.7 Loading procedures 52
4.8 Material prosperities 54
4.9 Processing of test results 56
CHAPTER 5: Results and Discussion 58
5.1 General 58
5.2 Analytical results and discussion 58
5.2.1 Profile Slenderness 58
5.2.2 Effect of out of plane stiffeners 82
5.2.3 Hysteretic behavior 106
5.3 Experimental result and discussion 169
5.3.1 General 169
5.3.2 Monotonic loading test 169
5.3.1 Cyclic loading test 211
5.3.1 Comparison 221
CHAPTER 6: Summary, Conclusions and Recommendations 223
6.1 Summary 223
6.2 Conclusion 223
6.3 Recommendation for future work 224

References 225
Appendix A: Complete set of numerical analysis output 228
Appendix B: Cyclic Loading Code for ANSYS 243
Appendix C: Work Shop Drawings 253

List of Tables

Table 2-1: Maximum allowable b/t and C/t ratio for compression cold -formed elements.[2] .5
Table 2-2: Maximum allowable dw/tw ratio for flexural cold -formed elements.[2].....5
Table 3-2: Profile parameters for adopted cold-formed beams 25
Table 3-1: Through plate Profile parameters for adopted cold-formed beams.....26
Table 3-3: Profile parameters for stiffened cold-formed beams.....29
Table 4-1: Monotonic loading test specimens 38
Table 4-2: Cyclic loading test specimens 39
Table 4-3: Mechanical proprieties of steel used 54

List of Figures

Figure 2-1: Definition of b, C and dw. [2] 5
Figure 2-2: CFS channel built up section connectors as per ECP 205 6
Figure 2-3: Classification of joint in Euro code-3 part 1-8 [7] 9
Figure 2-4: Cyclic loading according to AISC seismic provision [6] 11
Figure 2-5: Tensile test specimen dimensions as per ASTM A-370 [9] 11
Figure 3-1: ANSYS 11.0 shell element "shell181" representations [1] 22
Figure 3-2: ANSYS 11.0 rigid beam element MPC184 representations [1] 22
Figure 3-3: Finite element model and boundary conditions 23
Figure 3-4: Stress strain curve for employed material 24
Figure 3-5: Cold-formed steel beam with different profile shapes 25
Figure 3-6: Through plate dimensions 26
Figure 3-7: Out of plane stiffeners configuration: (a) CONFIG-0, (b) CONFIG-1, (c) CONFIG-2, (d) CONFIG-3 and (e) COFIG-4 28
Figure 3-8: Monotonic load substeps 30
Figure 3-9: Cyclic loading as per AISC seismic provision [6] 31
Figure 3-10: Sketch for bending moment diagram in beam and nominal dimensions 32
Figure 3-11: Calculation of rotation angle of the beam 33
Figure 3-12: Finite element model as per Alireza's model for cold-formed steel lipped C-section[18] 33
Figure 3-13: Compression of nominal moment (M/Mp) against rotation (θ) curve with Alireza [18] 34
Figure 4-1: General view of specimens 36
Figure 4-2: Cold-formed steel beam components 37
Figure 4-3: Specimens assembly using torque wrench 40
Figure 4-4: The supporting elements for test: (a) supporting frame (b) supporting column 40
Figure 4-5: Hydraulic jack temporary supports 41
Figure 4-6: Main dimensions of tested frame 42
Figure 4-7: The fixation of the supporting column with floor 43
Figure 4-8: The lateral supporting system and the foam material between the supporting system and the cold-formed steel beam 44
Figure 4-9: The lateral supporting system 45
Figure 4-10: The supporting frame view 46
Figure 4-11: The general view of a stain gauges used in test 47
Figure 4-12: Typical strain gauges instrumentation in the test specimens 48
Figure 4-13: General view of LVDT before using 49
Figure 4-14: Typical LVDT instrumentation in the test specimens 50
Figure 4-15: Data acquisition system 51
Figure 4-16: Computer used to monitor the test 51
Figure 4-17: General view of all instrumentation arrangement. 52
Figure 4-18: Cyclic loading program used in tests 53

Figure 4-19: Lab view program 53
Figure 4-20: Tensile test machine 55
Figure 4-21: Steel coupons after test and failure shape 55
Figure 4-22: Calculation of energy dissipation coefficient 57
Figure 5-1: Normalized moment (M/Mp) against (Θ) for: C-Section 150x60x15/t 59
Figure 5-2: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/t 60
Figure 5-3: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/t 60
Figure 5-4: Normalized moment (M/Mp) against (Θ) for: C-Section 400x100x25/t 61
Figure 5-5: Normalized moment (M/Mp) against H/t ratio for C-Section 62
Figure 5-6: Normalized moment (M/Mp) against B/t ratio for C-Section 63
Figure 5-7: Initial stiffness against plastic capacity (*Mp*) for C-Section and comparison with EC3 64
Figure 5-8: ductility coefficient (μ) against the plastic moment (*Mp*) of C-section 65
Figure 5-9: ductility coefficient against the slenderness ratio (H/t) of the web of C-section 65
Figure 5-10: ductility coefficient against the slenderness ratio (B/t) of the flanges of C-section 66
Figure 5-11: Lipped C-Section with dimensions 400x100x25/2 von misses stress distribution 67
Figure 5-12: Through plate von misses stress distribution 67
Figure 5-13: Normalized moment (M/Mp) against (Θ) for: Broken-Section 150x30x20/t 68
Figure 5-14: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/t 69
Figure 5-15: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/t 69
Figure 5-16: Normalized moment (M/Mp) against (Θ) for: Broken-Section 400x50x25/t 70
Figure 5-17: Normalized moment (M/Mp) against H/t ratio for Broken-Section 71
Figure 5-18: Initial stiffness against plastic capacity (Mp) for Broken-Section and comparison with EC3 71
Figure 5-19: ductility coefficient (μ) against the plastic moment (Mp) of Broken-section 72
Figure 5-20: ductility coefficient (μ) against the slenderness ratio (H/t) of the web of Broken-section 73
Figure 5-21: ductility coefficient (μ) against the slenderness ratio (B/t) of the flanges of Broken-section 73
Figure 5-22: Von misses stress distribution for Broken-Section with dimensions 400x50x25/2 74
Figure 5-23: Von misses stress distribution for through plate 75
Figure 5-24: Normalized moment (M/Mp) against (Θ) for: Curved-Section 150x35/t 76
Figure 5-25: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/t 76
Figure 5-26: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/t 77
Figure 5-27: Normalized moment (M/Mp) against (Θ) for: Curved-Section 400x60/t 77
Figure 5-28: Normalized moment (M/Mp) against H/t ratio for Curved-Section 78
Figure 5-29: Initial stiffness against plastic capacity (Mp) for Curved-Section and comparison with EC3 79
Figure 5-30: Von misses stress distribution for Curved-Section with dimensions 400x60/ 80

Figure 5-31: Von misses stress distribution for through plate 80
Figure 5-32: Comparison between different CFS beam section according to the maximum nominal moment (Max. M/Mp) against the plastic moment (Mp) 81
Figure 5-33: Comparison between different CFS beam section according to the maximum nominal moment (Max. M/Mp) against the web slenderness ratio (H/t) 82
Figure 5-34: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/1 without stiffeners and with different stiffeners configuration 84
Figure 5-35: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/2 without stiffeners and with different stiffeners configuration 84
Figure 5-36: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/3 without stiffeners and with different stiffeners configuration 85
Figure 5-37: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/4 without stiffeners and with different stiffeners configuration 85
Figure 5-38: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/1 without stiffeners and with different stiffeners configuration 86
Figure 5-39: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/2 without stiffeners and with different stiffeners configuration 86
Figure 5-40: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/3 without stiffeners and with different stiffeners configuration 87
Figure 5-41: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/4 without stiffeners and with different stiffeners configuration 87
Figure 5-42: Effect of H/t ratio on the maximum normalized moment (M/Mp) for: C-Section with different stiffeners configuration 88
Figure 5-43: Effect of B/t ratio on the maximum normalized moment (M/Mp) for: C-Section with different stiffeners configuration 89
Figure 5-44: Von misses stress distribution for lipped C-section with different stiffeners configuration; (a) CONFIG-1, (b) CONFIG-2, (c) CONFIG-3 and (d) CONFIG-4 90
Figure 5-45: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/1 without stiffeners and with different stiffeners configuration 91
Figure 5-46: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/2 without stiffeners and with different stiffeners configuration 92
Figure 5-47: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/3 without stiffeners and with different stiffeners configuration 92
Figure 5-48: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/4 without stiffeners and with different stiffeners configuration 93
Figure 5-49: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/1 without stiffeners and with different stiffeners configuration 93
Figure 5-50: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/2 without stiffeners and with different stiffeners configuration 94
Figure 5-51: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/3 without stiffeners and with different stiffeners configuration 94

Figure 5-52: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/4 without stiffeners and with different stiffeners configuration 95
Figure 5-53: Effect of H/t ratio on the maximum normalized moment (M/Mp) for: Broken-Section with different stiffeners configuration 96
Figure 5-54: Von misses stress distribution for Broken-section with different stiffeners configuration; (a) CONFIG-1, (b) CONFIG-2, (c) CONFIG-3 and (d) CONFIG-4 97
Figure 5-55: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/1 without stiffeners and with different stiffeners configuration..... 98
Figure 5-56: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/2 without stiffeners and with different stiffeners configuration..... 99
Figure 5-57: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/3 without stiffeners and with different stiffeners configuration..... 99
Figure 5-58: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/4 without stiffeners and with different stiffeners configuration..... 100
Figure 5-59: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/1 without stiffeners and with different stiffeners configuration..... 100
Figure 5-60: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/2 without stiffeners and with different stiffeners configuration..... 101
Figure 5-61: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/3 without stiffeners and with different stiffeners configuration..... 101
Figure 5-62: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/4 without stiffeners and with different stiffeners configuration..... 102
Figure 5-63: Effect of H/t ratio on the maximum normalized moment (M/Mp) for: Curved-Section with different stiffeners configuration 103
Figure 5-64: Von misses stress distribution for Curved-section with different stiffeners configuration; (a) CONFIG-1, (b) CONFIG-2, (c) CONFIG-3 and (d) CONFIG-4 104
Figure 5-65: Comparison between different CFS beam section with stiffeners CONFIG-4 according to the maximum nominal moment (Max. M/Mp) against the plastic moment (Mp) 105
Figure 5-66: Comparison between different CFS beam section with stiffeners CONFIG-4 according to the maximum nominal moment (Max. M/Mp) against web slenderness ratio (H/t)..... 106
Figure 5-67: Normalized moment (M/Mp) against Θ for: C-Section 200x85x20/2 under cyclic load 107
Figure 5-68: Normalized moment (M/Mp) against Θ for: C-Section 200x85x20/3 under cyclic load 108
Figure 5-69: Normalized moment (M/Mp) against Θ for: C-Section 300x100x20/2 under cyclic load 108
Figure 5-70: Normalized moment (M/Mp) against Θ for: C-Section 300x100x20/3 under cyclic load 109
Figure 5-71: Effect of H/t ratio on the energy dissipation capacity for C-section with depths 200 and 300mm..... 110

Figure 5-72: Effect of plastic moment (Mp) on the energy dissipation capacity for C-section with depths 200 and 300mm 110
Figure 5-73: M Normalized moment (M/Mp) against Θ for: Broken-Section 200x50x25/2 under cyclic load 111
Figure 5-74: Normalized moment (M/Mp) against Θ for: Broken-Section 200x50x25/3 under cyclic load 112
Figure 5-75: Normalized moment (M/Mp) against Θ for: Broken-Section 300x50x25/2 under cyclic load 112
Figure 5-76: Normalized moment (M/Mp) against Θ for: Broken-Section 300x50x25/3 under cyclic load 113
Figure 5-77: Effect of H/t ratio on the energy dissipation capacity for Broken-section with depths 200 and 300mm 114
Figure 5-78: Effect of plastic moment (Mp) on the energy dissipation capacity for Broken-section with depths 200 and 300mm 114
Figure 5-79: Normalized moment (M/Mp) against Θ for: Curved-Section 200x40/2 under cyclic load 115
Figure 5-80: Normalized moment (M/Mp) against Θ for: Curved-Section 200x40/3 under cyclic load 116
Figure 5-81: Normalized moment (M/Mp) against Θ for: Curved-Section 300x50/2 under cyclic load 116
Figure 5-82: Normalized moment (M/Mp) against Θ for: Curved-Section 300x50/3 under cyclic load 117
Figure 5-83: Effect of H/t ratio on the energy dissipation capacity for Curved-section with depths 200 and 300mm 118
Figure 5-84: Effect of plastic moment (Mp) on the energy dissipation capacity for Curved-section with depths 200 and 300mm 118
Figure 5-85: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/2 with stiffeners configuration CONFIG-1 under cyclic load 119
Figure 5-86: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/3 with stiffeners configuration CONFIG-1 under cyclic load 120
Figure 5-87: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/2 with stiffeners configuration CONFIG-1 under cyclic load 120
Figure 5-88: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/3 with stiffeners configuration CONFIG-1 under cyclic load 121
Figure 5-89: Effect of H/t ratio on the energy dissipation capacity for C-section with stiffeners configuration CONFIG-1 with depths 200 and 300mm 122
Figure 5-90: Effect of plastic moment (Mp) on the energy dissipation capacity for C-section with stiffeners configuration CONFIG-1 with depths 200 and 300mm 122
Figure 5-91: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/2 with stiffeners configuration CONFIG-1 under cyclic load 123
Figure 5-92: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/3 with stiffeners configuration CONFIG-1 under cyclic load 124

Figure 5-93: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/2 with stiffeners configuration CONFIG-1 under cyclic load 124
Figure 5-94: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/3 with stiffeners configuration CONFIG-1 under cyclic load 125
Figure 5-95: Effect of H/t ratio on the energy dissipation capacity for Broken-section with stiffeners configuration CONFIG-1 with depths 200 and 300mm 126
Figure 5-96: Effect of plastic moment (Mp) on the energy dissipation capacity for Broken-section with stiffeners configuration CONFIG-1 with depths 200 and 300mm 126
Figure 5-97: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/2 with stiffeners configuration CONFIG-1 under cyclic load 127
Figure 5-98: Normalized moment (M/Mp) against (Θ) for: Curved-Section 200x40/3 with stiffeners configuration CONFIG-1 under cyclic load 128
Figure 5-99: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/2 with stiffeners configuration CONFIG-1 under cyclic load 128
Figure 5-100: Normalized moment (M/Mp) against (Θ) for: Curved-Section 300x50/3 with stiffeners configuration CONFIG-1 under cyclic load 129
Figure 5-101: Effect of H/t ratio on the energy dissipation capacity for Curved-section with stiffeners configuration CONFIG-1 with depths 200 and 300mm 130
Figure 5-102: Effect of plastic moment (Mp) on the energy dissipation capacity for Curved-section with stiffeners configuration CONFIG-1 with depths 200 and 300mm 130
Figure 5-103: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/2 with stiffeners configuration CONFIG-2 under cyclic load 131
Figure 5-104: Normalized moment (M/Mp) against (Θ) for: C-Section 200x85x20/3 with stiffeners configuration CONFIG-2 under cyclic load 132
Figure 5-105: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/2 with stiffeners configuration CONFIG-2 under cyclic load 132
Figure 5-106: Normalized moment (M/Mp) against (Θ) for: C-Section 300x100x20/3 with stiffeners configuration CONFIG-2 under cyclic load 133
Figure 5-107: Effect of H/t ratio on the energy dissipation capacity for C-section with stiffeners configuration CONFIG-2 with depths 200 and 300mm 134
Figure 5-108: Effect of plastic moment (Mp) on the energy dissipation capacity for C-section with stiffeners configuration CONFIG-2 with depths 200 and 300mm 134
Figure 5-109: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/2 with stiffeners configuration CONFIG-2 under cyclic load 135
Figure 5-110: Normalized moment (M/Mp) against (Θ) for: Broken-Section 200x50x25/3 with stiffeners configuration CONFIG-2 under cyclic load 136
Figure 5-111: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/2 with stiffeners configuration CONFIG-2 under cyclic load 136
Figure 5-112: Normalized moment (M/Mp) against (Θ) for: Broken-Section 300x50x25/3 with stiffeners configuration CONFIG-2 under cyclic load 137
Figure 5-113: Effect of H/t ratio on the energy dissipation capacity for Broken-section with stiffeners configuration CONFIG-2 with depths 200 and 300mm 138