

Piping and Pipeline Calculations Manual

Construction,
Design Fabrication,
and Examination



J. Phillip Ellenberger



Contents

Preface ix

PART I

INTRODUCTION

- Chapter 1: Major Codes and Standards 3
Chapter 2: Metric versus U.S. Customary Measurement 13
Chapter 3: Selection and Use of Pipeline Materials 21

PART II

CONSTRUCTION AND DESIGN FABRICATION

- Chapter 4: Piping and Pipeline Sizing, Friction Losses,
and Flow Calculations 35
Chapter 5: Piping and Pipeline Pressure Thickness
Integrity Calculations 57
Chapter 6: Straight Pipe, Curved Pipe, and Intersection
Calculations 85
Chapter 7: Piping Flexibility, Reactions, and Sustained
Thermal Calculations 119
Chapter 8: Pipe-Supporting Elements and Methods
Calculations 145
Chapter 9: Specialty Components 161
Chapter 10: High-Frequency versus Low-Frequency
Vibration Calculations 181
Chapter 11: Occasional Loads Calculations 199

Chapter 12: Slug Flow and Fluid Transients Calculations	225
Chapter 13: Fabrication and Examination Elements Calculations	241
Chapter 14: Valves and Flow Control Calculations	263
Appendix: Charts, Graphs, and Other Helpful Guides	281
Bibliography	355
Index	357