

THE SAUDI BUILDING CODE for MASONRY STRUCTURES

SBC 305 - CC

Code & Commentaries



2018

TABLE OF CONTENTS

PREFACE	III
SUMMARY OF CHAPTERS	V
TABLE OF CONTENTS.....	VIII
PART 1 —GENERAL.....	1
CHAPTER 1 —GENERAL REQUIREMENTS.....	2
1.1 —SCOPE	2
1.2 —CONTRACT DOCUMENTS AND CALCULATIONS.....	2
1.3 —APPROVAL OF SPECIAL SYSTEMS OF DESIGN OR CONSTRUCTION	3
1.4 —STANDARDS CITED IN THIS CODE	3
CHAPTER 2 —NOTATION AND DEFINITIONS	7
2.1 —NOTATION.....	7
2.2 —DEFINITIONS	9
CHAPTER 3 —QUALITY AND CONSTRUCTION	18
3.1 —QUALITY ASSURANCE PROGRAM.....	18
3.2 —CONSTRUCTION CONSIDERATIONS	19
PART 2 —DESIGN REQUIREMENT.....	27
CHAPTER 4 —GENERAL ANALYSIS AND DESIGN CONSIDERATIONS	28
4.1 —LOADING.....	28
4.2 —MATERIAL PROPERTIES	29
4.3 —SECTION PROPERTIES	31
4.4 —CONNECTION TO STRUCTURAL FRAMES	32
4.5 —MASONRY NOT LAID IN RUNNING BOND	32
CHAPTER 5 —STRUCTURAL ELEMENTS	38
5.1 —MASONRY ASSEMBLIES	38
5.2 —BEAMS	41
5.3 —COLUMNS.....	43
5.4 —PILASTERS.....	44
5.5 —CORBELS.....	44
CHAPTER 6 —REINFORCEMENT, METAL ACCESSORIES, AND ANCHOR BOLTS	55
6.1 —DETAILS OF REINFORCEMENT AND METAL ACCESSORIES	55
6.2 —ANCHOR BOLTS	56
CHAPTER 7 —SEISMIC DESIGN REQUIREMENTS.....	65
7.1 —SCOPE	65
7.2 —GENERAL ANALYSIS	65
7.3 —ELEMENT CLASSIFICATION	66
7.4 —SEISMIC DESIGN CATEGORY REQUIREMENTS	70
PART 3 —ENGINEERED DESIGN METHOD	76
CHAPTER 8 —ALLOWABLE STRESS DESIGN OF MASONRY	77
8.1 —GENERAL	77
8.2 —UNREINFORCED MASONRY	84
8.3 —REINFORCED MASONRY.....	88
CHAPTER 9 —STRENGTH DESIGN OF MASONRY	99
9.1 —GENERAL	99
9.2 —UNREINFORCED (PLAIN) MASONRY	103
9.3 —REINFORCED MASONRY.....	105



TABLE OF CONTENTS

CHAPTER 10 —PRESTRESSED MASONRY	123
CHAPTER 11 —STRENGTH DESIGN OF AUTOCLAVED AERATED CONCRETE (AAC) MASONRY	124
11.1 —GENERAL	124
11.2 —UNREINFORCED (PLAIN) AAC MASONRY	127
11.3 —REINFORCED AAC MASONRY	128
PART 4 —PRESCRIPTIVE DESIGN METHODS.....	138
CHAPTER 12 —VENEER.....	139
12.1 —GENERAL	139
12.2 —ANCHORED VENEER.....	140
12.3 —ADHERED VENEER.....	144
CHAPTER 13 —GLASS UNIT MASONRY	148
13.1 —GENERAL	148
13.2 —PANEL SIZE.....	148
13.3 —SUPPORT	149
13.4 —EXPANSION JOINTS	149
13.5 —BASE SURFACE TREATMENT	149
13.6 —MORTAR	150
13.7 —REINFORCEMENT.....	150
CHAPTER 14 —MASONRY PARTITION WALLS.....	154
14.1 —GENERAL	154
14.2 —PRESCRIPTIVE DESIGN OF PARTITION WALLS.....	154
14.3 —LATERAL SUPPORT	155
14.4 —ANCHORAGE	156
14.5 —MISCELLANEOUS REQUIREMENTS	156
PART 5 —APPENDICES.....	160
APPENDIX A —EMPIRICAL DESIGN OF MASONRY	161
A.1 —GENERAL	161
A.2 —HEIGHT	162
A.3 —LATERAL STABILITY.....	162
A.4 —COMPRESSIVE STRESS REQUIREMENTS	162
A.5 —LATERAL SUPPORT	163
A.6 —THICKNESS OF MASONRY	163
A.7 —BOND	164
A.8 —ANCHORAGE	165
A.9 —MISCELLANEOUS REQUIREMENTS	166
APPENDIX B —DESIGN OF MASONRY INFILL	175
B.1 —GENERAL.....	175
B.2 —NON-PARTICIPATING INFILLS.....	176
B.3 —PARTICIPATING INFILLS	176
APPENDIX C —LIMIT DESIGN METHOD	182
C.0 —GENERAL.....	182
C.1 —YIELD MECHANISM.....	182
C.2 —MECHANISM STRENGTH.....	183
C.3 —MECHANISM DEFORMATION	183
PART 6 —SPECIFICATION FOR MASONRY STRUCTURES (TMS 602-13/ACI 530.1-13/ASCE 6-13)	185
CHAPTER S-1 —GENERAL	186
S-1.1 —SUMMARY	186
S-1.2 —DEFINITIONS	186
S-1.3 —REFERENCE STANDARDS	189
S-1.4 —SYSTEM DESCRIPTION	192



TABLE OF CONTENTS

S-1.5—SUBMITTALS	194
S-1.6—QUALITY ASSURANCE	195
S-1.7 DELIVERY, STORAGE, AND HANDLING	197
S-1.8—PROJECT CONDITIONS	197
CHAPTER S-2 —PRODUCTS.....	207
S-2.1 —MORTAR MATERIALS	207
S-2.2 —GROUT MATERIALS.....	208
S-2.3 —MASONRY UNIT MATERIALS	208
S-2.4 —REINFORCEMENT, PRESTRESSING TENDONS, AND METAL ACCESSORIES	210
S-2.5 —ACCESSORIES	213
S-2.6 —MIXING.....	213
S-2.7 —FABRICATION	214
CHAPTER S-3 —EXECUTION	221
S-3.1 —INSPECTION	221
S-3.2 —PREPARATION.....	221
S-3.3 -MASONRY ERECTION.....	222
S-3.4 —REINFORCEMENT, TIE, AND ANCHOR INSTALLATION	224
S-3.5 —GROUT PLACEMENT.....	227
S-3.6 —PRESTRESSING TENDON INSTALLATION AND STRESSING PROCEDURE	229
S-3.7 —FIELD QUALITY CONTROL	230
S-3.8 —CLEANING	231

