

THE SAUDI RESIDENTIAL BUILDING CODE

Volume 1: FOR ADMINISTRATIVE, ARCHITECTURAL
AND STRUCTURAL REQUIREMENTS

SBC 1101 - CC

Code & Commentaries

2018

TABLE OF CONTENTS-SBC1101—CC

CHAPTER 1— SCOPE AND ADMINISTRATION	1
SECTION 101 —GENERAL	1
SECTION 102 —APPLICABILITY	2
SECTION 103 —DEPARTMENT OF BUILDING SAFETY	3
SECTION 104 —DUTIES AND POWERS OF THE BUILDING OFFICIAL	3
SECTION 105 —PERMITS	5
SECTION 106 —CONSTRUCTION DOCUMENTS	5
SECTION 107 —TEMPORARY STRUCTURES AND USES	7
SECTION 108 —FEES	7
SECTION 109 —INSPECTIONS	7
SECTION 110 —CERTIFICATE OF OCCUPANCY	9
SECTION 111 —SERVICE UTILITIES	10
SECTION 112 —BOARD OF APPEALS	11
SECTION 113 —VIOLATIONS	11
SECTION 114 —STOP WORK ORDER	11
CHAPTER 1(A) —STRUCTURAL GENERAL REQUIREMENTS	13
SECTION 1A1 —SCOPE	13
SECTION 1A2 —APPLICABILITY	13
SECTION 1A3 —INTERPRETATION	13
SECTION 1A4 —BUILDING OFFICIAL	13
SECTION 1A5 —LICENSED DESIGN PROFESSIONAL	14
SECTION 1A6 —CONSTRUCTION DOCUMENTS AND DESIGN RECORDS	14
SECTION 1A7 —APPROVAL OF SPECIAL SYSTEMS OF DESIGN, CONSTRUCTION, OR ALTERNATIVE CONSTRUCTION MATERIALS	15
SECTION 1A8 —INSPECTION	15
SECTION 1A9 —CURING CONCRETE	15
SECTION 1A10 —CONCRETE EVALUATION AND ACCEPTANCE	17
CHAPTER 2 —GENERAL DEFINITIONS	23
SECTION 201 —GENERAL	23
SECTION 202 —DEFINITIONS	24
CHAPTER 2(A) —STRUCTURAL TERMINOLOGY	81
SECTION 2A1 —TERMINOLOGY	81
SECTION 2A2 —LOADING TERMINOLOGY	85
CHAPTER 3 —BUILDING PLANNING	86
SECTION 301 —DESIGN CRITERIA	87
SECTION 302 —FIRE-RESISTANT CONSTRUCTION	98
SECTION 303 —LIGHT, VENTILATION AND HEATING	113
SECTION 304 —MINIMUM ROOM AREAS	117
SECTION 305 —CEILING HEIGHT	118
SECTION 306 —SANITATION	118
SECTION 307 —TOILET, BATH AND SHOWER SPACES	119
SECTION 308 —GLAZING	119
SECTION 309 —GARAGES AND CARPORTS	128
SECTION 310 —EMERGENCY ESCAPE AND RESCUE OPENINGS	128
SECTION 311 —MEANS OF EGRESS	133
SECTION 312 —GUARDS AND WINDOW FALL PROTECTION	144
SECTION 313 —AUTOMATIC FIRE SPRINKLER SYSTEMS	146

SECTION 314 — SMOKE ALARMS.....	146
SECTION 315 — CARBON MONOXIDE ALARMS.....	149
SECTION 316 — FOAM PLASTIC	151
SECTION 317 — PORTABLE FIRE EXTINGUISHERS.....	157
SECTION 318 — PROTECTION AGAINST SUBTERRANEAN TERMITES	157
SECTION 319 — SITE ADDRESS.....	157
SECTION 320 — ACCESSIBILITY	158
SECTION 321 — ELEVATORS AND PLATFORM LIFTS	159
SECTION 322 — FLOOD-RESISTANT CONSTRUCTION	160
SECTION 323 — STORM SHELTERS.....	160
SECTION 324 — SOLAR ENERGY SYSTEMS.....	160
SECTION 325 — MEZZANINES.....	162
SECTION 326 — SWIMMING POOLS, SPAS AND HOT TUBS.....	162
SECTION 327 — MASONRY FIREPLACES.....	162
SECTION 328 — MASONRY HEATERS	162
SECTION 329 — MASONRY CHIMNEYS	163
SECTION 330 — FACTORY-BUILT FIREPLACES.....	163
SECTION 331 — FACTORY-BUILT CHIMNEYS	164
SECTION 332 — EXTERIOR AIR SUPPLY	165
CHAPTER 3(A) —LOADING AND DESIGN CRITERIA	235
SECTION 3A1 —SCOPE AND LIMITATIONS.....	235
SECTION 3A2 —BUILDING SYSTEM PERFORMANCE CRITERIA	235
SECTION 3A3 —LOAD FACTORS AND COMBINATIONS	238
SECTION 3A4 —ARCHITECTURAL AND STRUCTURAL COORDINATION-	241
SECTION 3A5 —STRUCTURAL LAYOUT	241
SECTION 3A6 —COLUMN SELECTION.....	242
SECTION 3A7 —FLOOR SYSTEMS	243
CHAPTER 3(B) —SIMPLIFIED SEISMIC DESIGN PROVISIONS	254
SECTION 3B1 —GENERAL.....	254
SECTION 3B2 —SIMPLIFIED METHOD	254
SECTION 3B3 —SEISMIC GROUND MOTION VALUES	256
SECTION 3B4 —SEISMIC DESIGN CATEGORY.....	258
SECTION 3B5 —SOIL PROFILE TYPES.....	259
SECTION 3B6 —DESIGN REQUIREMENTS FOR SEISMIC DESIGN CATEGORY A	259
SECTION 3B7 —STRUCTURAL DESIGN BASIS	260
SECTION 3B8 —RC FRAMING REQUIREMENTS.....	261
SECTION 3B9 —GENERAL DETAILING REQUIREMENTS.....	263
CHAPTER 3(C) —WIND AND RAIN REQUIREMENTS	275
SECTION 3C1 —SCOPE.	275
SECTION 3C2 —PERMITTED PROCEDURES.....	275
SECTION 3C3 —DEFINITIONS	275
SECTION 3C4 —NOTATIONS	276
SECTION 3C5 —GENERAL.....	277
SECTION 3C6 —WIND HAZARD MAP	278
SECTION 3C7 —WIND DIRECTIONALITY	278
SECTION 3C8 —EXPOSURE	278
SECTION 3C9 —TOPOGRAPHIC EFFECTS	279
SECTION 3C10 —GUST-EFFECTS	280
SECTION 3C11 —ENCLOSURE CLASSIFICATION	280
SECTION 3C12 —INTERNAL PRESSURE COEFFICIENT.....	280
SECTION 3C13 —WIND LOADS ON BUILDINGS-MWFRS (DIRECTIONAL PROCEDURE)	280
SECTION 3C14 —WIND LOADS—COMPONENTS AND CLADDING (C & C)	283
SECTION 3C15 —RAIN LOADS	284

CHAPTER 3(D) —DEAD, LIVE AND EARTH LOADS.....	310
SECTION 3D1 —DEAD LOADS	310
SECTION 3D2 —PARTITION WALLS	311
SECTION 3D3 —LIVE LOADS.....	312
SECTION 3D4 —IMPACT LOADS	313
SECTION 3D5 —SOIL LOADS AND HYDROSTATIC PRESSURE	314
CHAPTER 4 —STRUCTURAL SYSTEM ANALYSIS	329
SECTION 401 —NOTATIONS	329
SECTION 402 —SCOPE	330
SECTION 403 —GENERAL	330
SECTION 404 ANALYTICAL MODELING	331
SECTION 405 —MODELING ASSUMPTIONS	332
SECTION 406 —SIMPLIFIED METHOD OF ANALYSIS FOR REINFORCED CONCRETE CONTINUOUS BEAMS, ONE-WAY JOISTS AND ONE-WAY SLABS	333
SECTION 407 —SIMPLIFIED ANALYSIS OF BEAMS IN BUILDING FRAMES UNDER GRAVITY LOADING	333
SECTION 408 —SIMPLIFIED LATERAL FRAME ANALYSIS.....	334
SECTION 409 —SIMPLIFIED METHOD OF ANALYSIS FOR REINFORCED CONCRETE TWO-WAY SLABS	334
SECTION 410 —FIRST-ORDER ANALYSIS	334
SECTION 411 —ACCEPTABILITY OF FINITE ELEMENT ANALYSIS.....	339
CHAPTER 4(A) —MATERIALS AND CONSTRUCTION REQUIREMENTS	349
SECTION 4A1 — NOTATIONS	349
SECTION 4A2 —CONCRETE DESIGN PROPERTIES.....	349
SECTION 4A3 —CONCRETE DURABILITY REQUIREMENTS	350
SECTION 4A4 —CONCRETE MIXING AND PLACING.....	352
SECTION 4A5 —FORMWORK AND FORM-TIES.	353
SECTION 4A6 —STEEL REINFORCEMENT PROPERTIES	355
SECTION 4A7 —PROVISIONS FOR DURABILITY OF STEEL REINFORCEMENT	356
CHAPTER 4(B) —SECTIONAL STRENGTH.....	368
SECTION 4B1 —NOTATIONS.....	368
SECTION 4B2 —SCOPE	369
SECTION 4B3 —STRENGTH REDUCTION FACTORS	369
SECTION 4B4 —DESIGN ASSUMPTIONS FOR MOMENT AND AXIAL STRENGTH	370
SECTION 4B5 —FLEXURAL STRENGTH	371
SECTION 4B6 —AXIAL STRENGTH OR COMBINED FLEXURAL AND AXIAL STRENGTH	373
SECTION 4B7 —ONE-WAY SHEAR STRENGTH	376
SECTION 4B8 —TWO-WAY SHEAR STRENGTH.....	377
SECTION 4B9 —TORSIONAL STRENGTH.....	378
SECTION 4B10 —BEARING.....	381
SECTION 4B11 —SHEAR FRICTION	382
CHAPTER 4(C) —SERVICEABILITY REQUIREMENTS	419
SECTION 4C1 —NOTATIONS.....	419
SECTION 4C2 —SCOPE	419
SECTION 4C3 —DEFLECTIONS DUE TO SERVICE-LEVEL GRAVITY LOADS.....	419
SECTION 4C4 —DISTRIBUTION OF FLEXURAL REINFORCEMENT IN ONE-WAY SLABS AND BEAMS.....	421
SECTION 4C5 —SHRINKAGE AND TEMPERATURE REINFORCEMENT	422
CHAPTER 5 —ONE-WAY SLABS.....	434
SECTION 501 —NOTATIONS.....	434
SECTION 502 —SCOPE	434
SECTION 503 —GENERAL	435
SECTION 504 —DESIGN LIMITS	435

SECTION 505 — REQUIRED STRENGTH	435
SECTION 506 — DESIGN STRENGTH	436
SECTION 507 — REINFORCEMENT LIMITS	437
SECTION 508 — REINFORCEMENT DETAILING	437
SECTION 509 — CANTILEVERS OF ONE-WAY SLABS SUPPORTED ON BEAMS, OR WALLS	438
CHAPTER 5(A) — ONE-WAY JOISTS	470
SECTION 5A1 — NOTATIONS	470
SECTION 5A2 — SCOPE	470
SECTION 5A3 — GENERAL.....	471
SECTION 5A4 — DESIGN LIMITS.....	471
SECTION 5A5 — REQUIRED STRENGTH	472
SECTION 5A6 — DESIGN STRENGTH.....	472
SECTION 5A7 — REINFORCEMENT LIMITS	473
SECTION 5A8 — REINFORCEMENT DETAILING	473
SECTION 5A9 — SLAB BETWEEN JOISTS	474
SECTION 5A10 — DESIGN CHARTS.....	474
CHAPTER 5(B) — TWO WAY SLABS ON EDGE SUPPORTS	509
SECTION 5B1 — NOTATIONS	509
SECTION 5B2 — SCOPE	510
SECTION 5B3 — GENERAL.....	510
SECTION 5B4 — DESIGN LIMITS.....	511
SECTION 5B5 — REQUIRED STRENGTH	512
SECTION 5B6 — DESIGN STRENGTH.....	513
SECTION 5B7 — REINFORCEMENT LIMITS	514
SECTION 5B8 — REINFORCEMENT DETAILING	514
SECTION 5B9 — TWO-WAY CANTILEVERS OF SLABS SUPPORTED ON BEAMS, OR WALLS	515
SECTION 5B10 — TWO-WAY JOIST SYSTEMS	516
CHAPTER 5(C) — BEAMS	549
SECTION 5C1 — NOTATIONS	549
SECTION 5C2 — SCOPE	550
SECTION 5C3 — GENERAL.....	550
SECTION 5C4 — DESIGN LIMITS.....	550
SECTION 5C5 — REQUIRED STRENGTH	551
SECTION 5C6 — DESIGN STRENGTH.....	552
SECTION 5C7 — REINFORCEMENT LIMITS	553
SECTION 5C8 — REINFORCEMENT DETAILING	555
CHAPTER 6 — COLUMNS.....	566
SECTION 601 — NOTATIONS.....	566
SECTION 602 — SCOPE	567
SECTION 603 — GENERAL	567
SECTION 604 — DESIGN LIMITS	567
SECTION 605 — REQUIRED STRENGTH.....	568
SECTION 606 — DESIGN STRENGTH	568
SECTION 607 — REINFORCEMENT LIMITS	569
SECTION 608 — REINFORCEMENT DETAILING	569
CHAPTER 6(A) — STRUCTURAL WALLS, WATER TANKS AND BASEMENT WALLS	654
SECTION 6A1 — NOTATIONS	654
SECTION 6A2 — SCOPE	655
SECTION 6A3 — GENERAL.....	655
SECTION 6A4 — PART1: STRUCTURAL WALLS.....	655
SECTION 6A5 — PART 2: REINFORCED CONCRETE TANKS	658

SECTION 6A6 — CONCRETE BASEMENT WALLS	662
SECTION 6A7 — LATERAL EARTH PRESSURE	665
CHAPTER 6(B) — STAIRWAYS AND RAMPS	680
SECTION 6B1 — NOTATIONS	680
SECTION 6B2 — GENERAL.....	680
SECTION 6B3 — STRUCTURAL SUPPORT SYSTEM FOR STAIRS	682
SECTION 6B4 — STRUCTURAL DESIGN	683
CHAPTER 7 — FOUNDATIONS	695
SECTION 701 — NOTATIONS	695
SECTION 702 — SCOPE	696
SECTION 703 — GENERAL.....	696
SECTION 704 — GEOTECHNICAL INVESTIGATION	697
SECTION 705 — ALLOWABLE SOIL-BEARING CAPACITY	699
SECTION 706 — SETTLEMENT CRITERIA.....	700
SECTION 707 — ISOLATED FOOTINGS FOR COLUMNS OR WALLS.....	700
SECTION 708 — COMBINED FOOTING	705
SECTION 709 — MAT FOUNDATIONS	706
SECTION 710 — FOUNDATION DRAINAGE	707
SECTION 711 — FOUNDATION WATERPROOFING AND DAMPPROOFING	708
SECTION 712 — SLABS-ON-GROUND	709
SECTION 713 — SLOPE	710
CHAPTER 7(A) — REINFORCEMENT DETAILS, DRAWINGS AND SPECIFICATIONS	736
SECTION 7A1 — NOTATIONS	736
SECTION 7A2 — SCOPE	736
SECTION 7A3 — MINIMUM SPACING OF REINFORCEMENT	737
SECTION 7A4 — STANDARD HOOKS, SEISMIC HOOKS, CROSSTIES, AND MINIMUM INSIDE BEND DIAMETERS	737
SECTION 7A5 — DEVELOPMENT OF REINFORCEMENT	738
SECTION 7A6 — SPLICES.....	741
SECTION 7A7 — TRANSVERSE REINFORCEMENT.....	742
SECTION 7A8 — OPENINGS AND EMBEDDED CONDUITS AND PIPES IN STRUCTURAL MEMBERS.....	745
SECTION 7A9 — DRAWINGS.....	747
SECTION 7A10 — PROJECT SPECIFICATIONS	749
CHAPTER 8 — WALL CONSTRUCTION.....	766
SECTION 801 — GENERAL	766
SECTION 802 — GENERAL MASONRY CONSTRUCTION	766
SECTION 803 — GLASS UNIT MASONRY	784
SECTION 804 — EXTERIOR WINDOWS AND DOORS.....	786
CHAPTER 8(A) — WALL COVERING	819
SECTION 8A1 — GENERAL.....	819
SECTION 8A2 — INTERIOR COVERING	820
SECTION 8A3 — EXTERIOR COVERING.....	823
CHAPTER 9 — ROOF ASSEMBLIES.....	871
SECTION 901 — GENERAL	871
SECTION 902 — FIRE CLASSIFICATION	872
SECTION 903 — WEATHER PROTECTION.....	873
SECTION 904 — MATERIALS	874
SECTION 905 — REQUIREMENTS FOR ROOF COVERINGS	875
SECTION 906 — ROOF INSULATION	893
SECTION 907 — ROOFTOP-MOUNTED PHOTOVOLTAIC SYSTEMS.....	893

SECTION 908 — REROOFING	894
SECTION 909 — ROOFTOP-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS	896
CHAPTER 10 — COLD FORMED STEEL PROVISIONS	920
SECTION 1001 — GENERAL	920
SECTION 1002 — CONNECTIONS	923
SECTION 1003 — FOUNDATION	926
SECTION 1004 — FLOOR FRAMING	926
SECTION 1005 — WALL FRAMING	930
SECTION 1006 — ROOF FRAMING	935