

NEW BIRMINGHAM BUILDING CODE

(Continued from Page 8, Part 4)

Technical Bulletins of Building Construction and Equipment. H.F.P.A. Note: For comprehensive list see appendices B, C, D, E, F, G, H and I Basic Building Code.

APPENDIX C FIRE-RESISTANCE RATINGS OF COMMON MATERIALS

- The thickness of construction assemblies and fire protection of elements herein specified are the minimum permissible unless approved by time-temperature performance in the Standard Fire Test for specific assemblies.
- All assemblies shall be constructed to comply with the BOCA Basic Code in respect to details of construction and finishes. All special approvals based on specific fire test reports will be listed in the Construction Code of the Building Officials' Foundation.
- Sanded gypsum plaster unless otherwise noted is mixed in the proportion of 1:2 for the scratch coat and 1:3 for the brown coat.
- Perlite and Vermiculite plasters shall be mixed in the proportion of 100 pounds of neat gypsum to 2 cubic feet of aggregate for the

- scratch coat and 100 pounds of neat gypsum to 3 cubic feet of aggregate for the brown coat.
- Total thickness of plaster is measured from face of fiber boards, wood or gypsum lath or face of masonry bases and from back of metal lath.
- The following symbols have the meaning indicated:
 - F.R. — treated with approved fire-retardant process
 - O.S. — one side
 - B.S. — both sides
 - N.P. — not plastered
 - P.I.S. — plastered one side (fire side)
 - P.S. — plastered both sides (or stucco exterior)
- Mineral wool fill includes: rock wool bats weighing 1 pound per square foot; blown-in rock wool weighing 2 pounds per square foot; glass wool weighing 0.6 pound per square foot.
- Temporary bracing for studless partitions shall be in accordance with the approved proprietary specification for the system employed.
- Metal lath used for studless partitions shall be installed with long dimension vertical in a continuous sheet, anchored to the floor and secured to the ceiling with runners and all joints lapped and tied.
- Grade 1 and grade 2 concrete graded in accordance with characteristics of aggregate as specified in section 817 of the Basic Building Code.
- When gypsum or other wall boards are applied in double layers, the first layer shall be applied vertically and the second horizontally, or both layers shall be applied horizontally with the horizontal joints staggered not less than 12 inches.

APPENDIX C-1.—MASONRY BEARING WALLS

Type of walls	Thickness in inches						
	4 hours	3 hours	2 hours	1 1/2 hours	1 hour	1/2 hour	1/3 hour
Solid brick and dressed stone	** 8 N.P. ** 12 N.P.	** 8 N.P. ** 12 N.P.	** 8 N.P. ** 12 N.P.	** 8 N.P. ** 12 N.P.	** 8 N.P. ** 12 N.P.	** 8 N.P. ** 12 N.P.	** 8 N.P. ** 12 N.P.
Hollow wall, solid unit	** 12 N.P. ** 8 P.S.	** 12 N.P. ** 8 P.S.	** 12 N.P. ** 8 P.S.	** 12 N.P. ** 8 P.S.	** 12 N.P. ** 8 P.S.	** 12 N.P. ** 8 P.S.	** 12 N.P. ** 8 P.S.
Cavity wall 12" air space	** 14 N.P. ** 10 P.S.	** 14 N.P. ** 10 P.S.	** 14 N.P. ** 10 P.S.	** 14 N.P. ** 10 P.S.	** 14 N.P. ** 10 P.S.	** 14 N.P. ** 10 P.S.	** 14 N.P. ** 10 P.S.
Hollow brick units	1 unit ** 12 P.S. ** 8 N.P.	1 unit ** 12 P.S. ** 8 N.P.	1 unit ** 12 P.S. ** 8 N.P.	1 unit ** 12 P.S. ** 8 N.P.	1 unit ** 12 P.S. ** 8 N.P.	1 unit ** 12 P.S. ** 8 N.P.	1 unit ** 12 P.S. ** 8 N.P.
Number of units in wall thickness	2 units ** 8 P.S. ** 4 P.S.	2 units ** 8 P.S. ** 4 P.S.	2 units ** 8 P.S. ** 4 P.S.	2 units ** 8 P.S. ** 4 P.S.	2 units ** 8 P.S. ** 4 P.S.	2 units ** 8 P.S. ** 4 P.S.	2 units ** 8 P.S. ** 4 P.S.
Hollow concrete units	1 unit ** 12 N.P. ** 8 P.S.	1 unit ** 12 N.P. ** 8 P.S.	1 unit ** 12 N.P. ** 8 P.S.	1 unit ** 12 N.P. ** 8 P.S.	1 unit ** 12 N.P. ** 8 P.S.	1 unit ** 12 N.P. ** 8 P.S.	1 unit ** 12 N.P. ** 8 P.S.
Hollow concrete units	2 units ** 12 N.P. ** 8 P.S.	2 units ** 12 N.P. ** 8 P.S.	2 units ** 12 N.P. ** 8 P.S.	2 units ** 12 N.P. ** 8 P.S.	2 units ** 12 N.P. ** 8 P.S.	2 units ** 12 N.P. ** 8 P.S.	2 units ** 12 N.P. ** 8 P.S.
Structural clay tile	1 unit ** 12 P.S. 3 Cells	1 unit ** 12 P.S. 3 Cells	1 unit ** 12 P.S. 3 Cells	1 unit ** 12 P.S. 3 Cells	1 unit ** 12 P.S. 3 Cells	1 unit ** 12 P.S. 3 Cells	1 unit ** 12 P.S. 3 Cells
Number of Units in wall thickness	2 units ** 16 N.P. 8 Cells	2 units ** 16 N.P. 8 Cells	2 units ** 16 N.P. 8 Cells	2 units ** 16 N.P. 8 Cells	2 units ** 16 N.P. 8 Cells	2 units ** 16 N.P. 8 Cells	2 units ** 16 N.P. 8 Cells
Combination wall 8" tile and 4" brick facing	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.
Rubble stone masonry	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.	** 12 P.S. ** 8 N.P.
Mass concrete	Grade 1 ** 8 N.P. ** 4 N.P.	Grade 1 ** 8 N.P. ** 4 N.P.	Grade 1 ** 8 N.P. ** 4 N.P.	Grade 1 ** 8 N.P. ** 4 N.P.	Grade 1 ** 8 N.P. ** 4 N.P.	Grade 1 ** 8 N.P. ** 4 N.P.	Grade 1 ** 8 N.P. ** 4 N.P.
Reinforced concrete	Grade 2 ** 8 N.P. ** 4 N.P.	Grade 2 ** 8 N.P. ** 4 N.P.	Grade 2 ** 8 N.P. ** 4 N.P.	Grade 2 ** 8 N.P. ** 4 N.P.	Grade 2 ** 8 N.P. ** 4 N.P.	Grade 2 ** 8 N.P. ** 4 N.P.	Grade 2 ** 8 N.P. ** 4 N.P.

*Nonbearing. **Noncombustible framing. ***Combustible framing.

APPENDIX C-2.—NON-BEARING MASONRY PARTITIONS

Type of partition	Thickness in inches						
	4 hours	3 hours	2 hours	1 1/2 hours	1 hour	1/2 hour	1/3 hour
Structural clay tile 1-cell in wall thickness	6 P.S. 3 Cells	6 P.S. 3 Cells	6 P.S. 3 Cells	6 P.S. 3 Cells	6 P.S. 3 Cells	6 P.S. 3 Cells	6 P.S. 3 Cells
Structural clay tile 2-cells in wall thickness	8 P.S. 6 Cells	6 P.S. (10" solid)	6 P.S. 6 Cells	4 P.S. 6 Cells	4 P.S. 6 Cells	4 P.S. 6 Cells	4 P.S. 6 Cells
Hollow concrete units	Grade 1 6 P.S. 6 N.P.	Grade 1 6 P.S. 6 N.P.	Grade 1 6 P.S. 6 N.P.	Grade 1 6 P.S. 6 N.P.	Grade 1 6 P.S. 6 N.P.	Grade 1 6 P.S. 6 N.P.	Grade 1 6 P.S. 6 N.P.
Hollow concrete units	Grade 2 6 P.S. 6 N.P.	Grade 2 6 P.S. 6 N.P.	Grade 2 6 P.S. 6 N.P.	Grade 2 6 P.S. 6 N.P.	Grade 2 6 P.S. 6 N.P.	Grade 2 6 P.S. 6 N.P.	Grade 2 6 P.S. 6 N.P.
Solid gypsum blocks	5 N.P.	3 N.P.	3 N.P.	2 P.S. 2 N.P.	2 P.S. 2 N.P.	2 P.S. 2 N.P.	2 P.S. 2 N.P.
Hollow gypsum blocks	6 N.P.	3 P.S. 3 N.P.	3 P.S. 3 N.P.	2 P.S. 2 N.P.	2 P.S. 2 N.P.	2 P.S. 2 N.P.	2 P.S. 2 N.P.
Glass blocks and wired glass	6 P.S.	6 P.S.	6 P.S.	4 hollow blocks 1/4 wired glass	4 hollow blocks 1/4 wired glass	4 hollow blocks 1/4 wired glass	4 hollow blocks 1/4 wired glass
Clutter concrete tile	6 P.S.	6 N.P.	4 P.S.	4 N.P.	4 N.P.	4 N.P.	4 N.P.
Reinforced concrete	Grade 1 6 N.P.	6 N.P.	3 N.P.	2 N.P.	2 N.P.	2 N.P.	2 N.P.
Reinforced concrete	Grade 2 6 P.S.	6 P.S.	6 N.P.	4 N.P.	2 P.S.	2 N.P.	2 N.P.
Hollow Perlite blocks	4 N.P.						

APPENDIX C-3.—WOOD STUD WALLS AND PARTITIONS

Type of construction	Thickness in inches						
	1 1/2 hours	1 hour	1/2 hour	1/3 hour	1/4 hour	1/5 hour	1/6 hour
2 x 4 studs, gypsum board	% Perf. B.S. with 1/2" Perlite or Vermiculite	% B.S. plaster neat gypsum or Vermiculite Two % B.S. N.P.	1/4 B.S. N.P. with 1/4" min. wool fill	1/4 B.S. N.P.	5/16 B.S. N.P.	5/16 B.S. N.P.	5/16 B.S. N.P.
2 x 4 studs, fiber board	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.
2 x 4 studs, metal lath	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. % plaster Vermiculite	P.S. % plaster Vermiculite	P.S. with lime plaster Portland cement mortar	P.S. with lime plaster Portland cement mortar	P.S. with lime plaster Portland cement mortar	P.S. with lime plaster Portland cement mortar
2 x 4 studs, wood sheathing	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.	% B.S. F.R.
2 x 4 studs, wood lath	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. min. wool fill "P.S. 1" neat gypsum.	P.S. min. wool fill "P.S. 1" neat gypsum.
2 x 4 studs, cement asbestos boards	3/16 B.S. on % gypsum boards	3/16 B.S. on 5/16 gypsum boards	3/16 B.S. on 5/16 gypsum boards	3/16 B.S. on 5/16 gypsum boards	3/16 B.S. on 5/16 gypsum boards	3/16 B.S. on 5/16 gypsum boards	3/16 B.S. on 5/16 gypsum boards
2 x 2 studs, 3/4" wood	% B.S. with min. wool fill	% B.S. with min. wool fill	% B.S. with min. wool fill	% B.S. with min. wool fill	% B.S. with min. wool fill	% B.S. with min. wool fill	% B.S. with min. wool fill
Solid wood	2 P.F.	1 1/2 P.F.	1 P.F.	1 P.F.	1 P.F.	1 P.F.	1 P.F.

All assemblies are non-bearing except where noted.
*Rated as 1-hour when non-load-bearing.
**Rated as 1/2-hour when non-load-bearing.
Sanded gypsum plaster unless otherwise noted.

APPENDIX C-4.—STEEL FRAMED WALLS AND PARTITIONS

Type of construction	Thickness in inches						
	2 1/2 hours	2 hours	1 1/2 hours	1 hour	1/2 hour	1/3 hour	1/4 hour
Solid steel studs and metal lath	2 1/2 neat gypsum solid	2 neat gypsum solid	2 1/2 sanded gypsum solid	2 sanded gypsum 1 1/2 Perlite plaster	2 sanded gypsum solid	2 sanded gypsum solid	2 sanded gypsum solid
Solid steel studs and gypsum lath	2 1/2 neat gypsum solid	2 neat gypsum solid	2 1/2 sanded gypsum solid	2 sanded gypsum 1 1/2 Perlite plaster	2 sanded gypsum solid	2 sanded gypsum solid	2 sanded gypsum solid
Hollow steel studs and metal lath 2" air space total thickness 2"	** P.S. neat gypsum	** P.S. neat gypsum	** P.S. neat gypsum	** P.S. neat gypsum	** P.S. neat gypsum	** P.S. neat gypsum	** P.S. neat gypsum
Framed steel studs and metal lath furred 1 1/2" total thickness	P.S. with 1" Perlite plaster	P.S. with 1" Perlite plaster	P.S. with 1" Perlite plaster	P.S. with 1" Perlite plaster	P.S. with 1" Perlite plaster	P.S. with 1" Perlite plaster	P.S. with 1" Perlite plaster
Steel studs and steel sheathing	No. 18g. B.S. filled 1/2" V. Vermiculite	No. 18g. B.S. filled 1/2" V. Vermiculite	No. 18g. B.S. filled 1/2" V. Vermiculite	No. 18g. B.S. filled 1/2" V. Vermiculite	No. 18g. B.S. filled 1/2" V. Vermiculite	No. 18g. B.S. filled 1/2" V. Vermiculite	No. 18g. B.S. filled 1/2" V. Vermiculite
Studless solid parti- tions	2 solid 1 1/2 sanded gypsum on metal lath	2 solid 1 1/2 sanded gypsum on metal lath	2 solid 1 1/2 sanded gypsum on metal lath	2 solid 1 1/2 sanded gypsum on metal lath	2 solid 1 1/2 sanded gypsum on metal lath	2 solid 1 1/2 sanded gypsum on metal lath	2 solid 1 1/2 sanded gypsum on metal lath
Steel studs and 4" back veneer	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.	1" sanded gyp- sum on metal lath O.S. 1" sanded gyp- sum on metal lath O.S.

Tables otherwise noted all assemblies are non-load-bearing.
**Both load-bearing and non-load-bearing.

APPENDIX C-5.—TIMBER AND UNPROTECTED METAL COLUMNS

Type of construction	Thickness in inches					
	2 hours	1 1/2 hours	1 hour	1/2 hour	1/3 hour	1/4 hour
Heavy timber (mill)	1/2" gypsum plaster or portland cement mortar on metal lath with 1/2" air space	reinforced concrete or protected steel caps	1 hour	1/2 hour	1/3 hour	1/4 hour
Concrete filled pipe (400 lb. concrete)			Interior reinforcement	4% H.W. or over	Less than 4% H.W.	
Unprotected structural steel						min. diam. 5"
Unprotected cast iron				concrete filled	min. th. metal 3/4"	

APPENDIX C-6.—STRUCTURAL STEEL COLUMN PROTECTION

Type of protection	Thickness in inches					
	4 hours	3 hours	2 hours	1 1/2 hours	1 hour	1/2 hour
Poured concrete	Grade 1 4	Grade 1 3	Grade 1 2	Grade 1 1 1/2	Grade 1 1	Grade 1 1/2
Concrete P.F. units	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.
Clay tile P.F. units	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.
Gypsum tile P.F. units	4 hollow or 3 P.I.S. 2 solid P.I.S.	3 hollow 2 solid P.I.S.	3 hollow 2 solid	3 hollow 2 solid	3 hollow 2 solid	3 hollow 2 solid
Brick units	4	4	4	4	4	4
Painted gypsum	2 reinf.	2 reinf.	2 reinf.	1 1/2 reinf.	1 1/2 reinf.	1 1/2 reinf.
Gypsum plaster on metal lath	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	Double reinf.	Double reinf.	Double reinf.
Cement plaster on metal lath	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	1 1/2" double reinf.	1 1/2" double reinf.	1 1/2" double reinf.
Vermiculite and Perlite plaster on metal lath	metal lath furred 1" and 1" plaster hollow spaces filled Vermiculite 2% reinf. plaster on flanges and 1 1/2" plaster on metal lath unfilled other faces	1" on metal lath furred hollow spaces filled (2" on flanges) and 1" on metal lath unfilled other faces	3/4" on metal lath furred hollow spaces filled (1 1/2" on flanges) and 3/4" on metal lath unfilled other faces	3/4" on metal lath furred hollow spaces filled (1 1/2" on flanges) and 3/4" on metal lath unfilled other faces	3/4" on metal lath furred hollow spaces filled (1 1/2" on flanges) and 3/4" on metal lath unfilled other faces	3/4" on metal lath furred hollow spaces filled (1 1/2" on flanges) and 3/4" on metal lath unfilled other faces

APPENDIX C-7.—STEEL TRUSS AND GIRDER PROTECTION

Type of protection	Thickness in inches					
	4 hours	3 hours	2 hours	1 1/2 hours	1 hour	1/2 hour
Poured concrete	Grade 1 4	Grade 1 3	Grade 1 2	Grade 1 1 1/2	Grade 1 1	Grade 1 1/2
Concrete P.F. units	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.
Clay tile P.F. Units	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.	4 P.I.S.
Gypsum tile P.F. units	4 hollow or 3 P.I.S. 2 solid P.I.S.	3 hollow 2 solid P.I.S.	3 hollow 2 solid	3 hollow 2 solid	3 hollow 2 solid	3 hollow 2 solid
Brick units	4	4	4	4	4	4
Painted gypsum	2 reinf.	2 reinf.	2 reinf.	1 1/2 reinf.	1 1/2 reinf.	1 1/2 reinf.
Gypsum plaster on metal lath	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	1 1/2" double reinf.	1 1/2" double reinf.	1 1/2" double reinf.
Cement plaster on metal lath	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	Two 3/4" layers 1/2" air space	1 1/2" double reinf.	1 1/2" double reinf.	1 1/2" double reinf.
Vermiculite and Perlite Plaster on metal lath	1" plaster 2 1/2" air space	1" plaster 2 1/2" air space	1" plaster 2 1/2" air space	1" plaster 2 1/2" air space	1" plaster 2 1/2" air space	1" plaster 2 1/2" air space

Note: Floor beams and other secondary members protected in accordance with required fire resistance rating of the floor construction.

APPENDIX C-8.—FLOOR AND ROOF ASSEMBLIES

Type of construction	Over-all thickness in inches	Fire resistance rating hours	Minimum thickness of protection in inches					
			4 hours	3 hours	2 hours	1 1/2 hours	1 hour	1/2 hour
Brick unit segmental arches on steel framing	4 with concrete spandrel fill 8 with concrete spandrel fill	3	2	2	2	1 1/2	1 1/2	
Clay tile segmental arches on steel framing	6 with concrete spandrel fill (2 cell) 8 with concrete spandrel fill (2 cell)	3	2	2	2	1 1/2	1 1/2	
Clay tile flat arches on steel framing	8 — (2 cell) 12 — (3 cell)	3	2	2	2	1 1/2	1 1/2	
Poured gypsum on steel framing	3 — Reinforced 4 — Reinforced	3	2	2	2	1 1/2	1 1/2	
Steel joists or light steel framing with noncombustible structural protection as described		3	2	2	2	1 1/2	1 1/2	

APPENDIX C-9.—REINFORCED CONCRETE PROTECTION

The thickness of protection on slabs and secondary beams may be reduced when supplemented by a fire-resistive ceiling protection described in appendix C-8.

Member	Minimum thickness of protection in inches					
	4 hours	3 hours	2 hours	1 1/2 hours	1 hour	1/2 hour
Columns, trusses and girders	Grade 1 2	Grade 1 2	Grade 1 2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2
Beams	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2
Slabs on beams or girders	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2
Flat slabs	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2
Top slabs in steel joint construction	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2	Grade 1 1 1/2

