Comparison of General Services Provisions of the Toronto Area Building Code and the National Building Code, Canada (1953)

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SUBJECT

COMPARISON OF GENERAL SERVICES PROVISIONS OF THE TORONTO AREA BUILDING CODE AND THE NATIONAL BUILDING CODE, CANADA (1953)

This Note contains comments resulting from a comparison of Draft No. 4 of Part 6, General Services, of the Toronto Area Building Code (T.A.B.C.) with the second printing (revised to November 1959) of Part 6, General Services, of the National Building Code of Canada, 1953 (N.B.C.).

1. GENERAL

(a) The arrangement of the two codes is quite similar, the main exception being that whereas the N.B.C. divides Heating and Air Conditioning into:

6.2.2	Ventilating Systems and Equipment (approximately 3 pages).
6.2.3	Heating Systems and Equipment (approximately 23 pages).
6.2.4	Air Cooling Systems and Equipment (one small paragraph).

the T.A.B.C. covers the same field with:

6.2 Heating and Air-Conditioning Systems for one- and two-family dwellings and buildings in which open stairways are permitted (approximately 8 pages).

6.3 Ventilating Heating and Air Cooling Systems and equipment other than those covered in 6.2 (approximately 20 pages).

6.4 Chimneys and other Venting Equipment (approximately 6 pages).

(b) The T.A.B.C. arrangement is worthwhile considering in view of the inclusion of Part 9, Housing, in the 1960 edition of the N.B.C.

(c) The T.A.B.C. arrangement whereby chimneys, etc. are given a separate subsection (6.4) after Ventilating, Heating, and Cooling Systems (6.3) has merit when compared with N.B.C. which at present puts Chimneys, etc. (6.2.3.9) in between Gas Firing (6.2.3.8) and Ducts for Warm Air Heating Systems (6.2.3.10) under the section on Heating Systems (6.2.3). There are vents and other allied equipment that serve cooking appliances as well as heating equipment.

(d) Several of the T.A.B.C. "interpretations" differ from the corresponding N.B.C. "definitions" notably floor furnace, lockout, oil burning equipment, plenum chamber, vent or flue connector, and ventstack. These last two cover oil-fired appliances as well as gas-fired in the T.A.B.C.

2. In the T.A.B.C. it would seem that subsections 6.2.1.1-General, 6.2.1.2-Plans and Specifications, and 6.2.1.3-Design and Installation should be made to apply to hot water systems as well as warm air.

3. Table 6.1 in the T.A.B.C. should be split into two parts to be under Warm Air Systems (6.2.1) and Hot Water Systems (6.2.2). Steam heating boilers as covered in Table 6.1 should probably go under (6.2.2) in which case the heading for 6.2.2 should read Hot Water and Steam Heating Systems.

4. In T.A.B.C. clause 6.2.1.4.1-Duct Material the thicknesses agree with the N.B.C. except that in T.A.B.C. rectangular duct widths change from "less than 14" and "14 or more" for ducts not enclosed in partitions, to "14 or less" and "over 14" for ducts enclosed in partitions, whereas the N.B.C. retains the terminology "less than 14" and "14 or more" for both categories. The T.A.B.C. has sizes for tin plate which the N.B.C. does not have.

5. Clause 6.2.1.4.1(c) of the T.A.B.C. presumably allows Sonoair-duct. The N.B.C. has no such clause.

6. The T.A.B.C. clauses 6.2.1.4.2, 6.2.1.4.3 etc. to 6.2.1.4.6 with headings "Duct Joints", "Hangers" etc. are easier to follow than N.B.C. which has no heading for these under 6.2.3.10.3(b).

7. In T.A.B.C. clause 6.2.1.4.2-Duct Joints, the last sentence has been included presumably to allow Arno Ductape. N.B.C. has no similar sentence.

8. The T.A.B.C. (6.2.1.4) does not differentiate between high temperature and low temperature systems as does the N.B.C. (6.2.3.10.3) but it refers to a duct, riser, boot or box on a system that (does or does not) require 18-inch clearance above the supply plenum or bonnet (clause 6.2.1.6.4). This system is probably easier to follow than N.B.C. (except that in the case of 6.2.1.6.4 (b) and (d) there is some conflict e.g. a person might think (b) applied to all ducts entering the floor of the first story, until he reads on to clause (d)). The arrangement in N.B.C. would be improved if some subheadings were used.

9. The T.A.B.C. distinguishes between horizontal (6.2.1.6.3) and vertical (6.2.1.6.4) ducts which is a good idea, and also includes risers, boots, and register boxes in the heading which N.B.C. neglects.

10. On the matter of headings, both the T.A.B.C. and the N.B.C. would be improved if bolder type were used for 3-digit and 4-digit headings to readily distinguish them from the 5-digit titles.

11. In the T.A.B.C. the notes at top of page 8 which apply to table 6.1 are misplaced.

12. Table 6.1, page 6, of the T.A.B.C.

(a) The inclusion of "Smoke Flue or Vent Pipe" clearances in

the same table as clearances from furnaces and boilers is probably a good space saver (although the terminology does not match the definitions) but the N.B.C. arrangement with clearances to smokepipes under "smokepipes" is probably more logical.

(b) In the T.A.B.C. one has to go from page 6 to page 15 to find the table with specified forms of protection whereas the N.B.C. has the two tables on the same page.

(c) Presumably in the T.A.B.C. the reduced clearances of Table 6.2 apply only to other than one- and two-family dwellings, i.e. Section 6.3. For one- and two-family dwellings (Section 6.2.) there is no reference to Table 6.2.

(d) Item V in Table 6.1 lacks two words. In line 6 the word "type" should be inserted after "water-wall" and in line 8 the word "insulating" is presumably intended after the word "satisfactory".

(e) Item VII appears to be the same as the second half of Item V except for the word "automatically" and yet the clearance on the firing side has been increased from 24 to 48 inches.

(f) Why are figures omitted for Item VII under the heading Projecting Flue Box or Draft Hood? Flue box, incidentally, is not defined.

(g) T.A.B.C. method of specifying liquid fuel, gas fuel, electricity, and solid fuel seems to be an improvement over N.B.C.

13. N.B.C. clause covering pipeless furnace registers (6.2.3.10.3 (b), para 9, page 28) is more specific than T.A.B.C. clause 6.2.1.6.5.

14. T.A.B.C. clause 6.2.1.8.2 requires flash point of liquid adhesive coatings used on filters to be 325°F or higher whereas N.B.C. requires not lower than 350°F (6.2.2.6).

15. For electrical wiring and equipment the T.A.B.C. refers to Hydro-Electric Power Commission of Ontario (6.2.19) whereas the N.B.C. (6.2.1.3(d) and Section 6.4) uses the C.S.A. Electrical Code.

16. For the installation of oil burning equipment and gas burning appliances and equipment the T.A.B.C. refers to the Ontario Fuel Board Act 1954. The original Act contains nothing regarding installation, but the subsequent yearly amendments do. The

reference should therefore include the amendments. The N.B.C. refers to Pamphlet No. 31 of the Dominion Board of Insurance Underwriters for oil and to Pamphlets No. 54 and 58 of the National Fire Protection Association for gas. These should probably be changed to C.S.A. B139 and B149 respectively.

17. In the T.A.B.C., Section 6.2.2-Hot Water Heating Systems should contain a clause similar to T.A.B.C. clause 6.2.1.9 for warm air referring to Electrical Wiring and Equipment.

18. The T.A.B.C. in Section 6.2.2 does not include steam heating systems or steam boilers in one- and two-family dwellings, but such boilers are listed in Table 6.1. N.B.C. covers steam systems in one- and two-family dwellings (6.2.3).

19. In the T.A.B.C. the clauses dealing with the type of firing (oil and gas 6.2.2.3 and solid fuel 6.2.2.4) are included with the furnace or boiler concerned. In the N.B.C. there are separate subsections for these clauses (solid fuel firing-6.2.3.6, oil-6.2.3.7, and gas-6.2.3.8), dealing with all furnaces and boilers. This has probably come about because these sections (particularly oil and gas firing) are fairly lengthy. With the revision of the N.B.C. the length of these most likely will be reduced, and it may be wise to consider the T.A.B.C. arrangement.

20. In the T.A.B.C. the electric switch clause (6.2.2.4.1(b) paragraph 1) is probably better than N.B.C.'s 6.2.3.6.5(b) paragraph 3 since it would seem advisable to have such a switch also for stokers burning pulverized fuel.

21. In the T.A.B.C. there are no provisions for mounting warm-air furnaces in one- and two-family dwellings such as there are for boilers (6.2.2.5(a)).

22. In the T.A.B.C. there is no clause stating that a temperature high limit control is necessary on a warm-air furnace in one- and two-family dwellings although in 6.2.1.5.1 such a control is mentioned.

23. Neither the T.A.B.C. (6.2.2.6(c)) nor the N.B.C. (6.2.3.2.3(g)) allows a relief valve on the feed line such as are combined with pressure reducing valves. Is this an oversight?

24. In T.A.B.C. clause 6.2.2.6(d)-Expansion Tanks (for one- and two-family dwellings) the words "of adequate capacity" eliminate the need for the table of capacities used in N.B.C. Also the T.A.B.C. does not require the three-way valve of the shut-off drain and vent type except in other than one- and two-family dwellings.

25. The T.A.B.C. does not require float-operated feed valve and bottom blow-off as in N.B.C. clauses 6.2.3.2.3(i) and (j) except in other than one- and two-family dwellings.

26. The T.A.B.C. does not cover floor furnaces except in other than one- and two-family dwellings.

27. Under clause 6.3.2 of the T.A.B.C. there should be some reference to the requirements for "Ducts for Ventilating, Heating and Cooling Systems" which appear under 6.3.5.

28. The T.A.B.C. (6.3.3.2.1) covers all boilers whereas the N.B.C. (6.2.3.2.1) is restricted in scope to steam boilers 15 lb and under and hot water boilers 30 lb and under.

29. In the T.A.B.C. "Piping for Steam and Hot Water Heating Systems" (6.3.3.2.4) follows "Controls and Safety Devices" (6.3.3.2.3) under 6.3.3.2 "Boilers and Furnaces". The N.B.C. has this subsection on "Piping etc." at the end of the section on "Heating Systems and Equipment". In the revision of N.B.C. this relocation might be considered.

30. The N.B.C. (6.2.3.11, paragraph 1) requires "corrosion-resistant" materials for piping, whereas the T.A.B.C. (6.3.3.2.4 paragraph 1) omits this requirement. Words like "corrosion-resistant" and "non-combustible" should be defined in the N.B.C.

31. Note 29 above applies to "Unit Heaters, Radiators and Convectors" (6.3.3.2.5 in T.A.B.C.; 6.2.3.12 in N.B.C.).

32. Table 6.3 of the T.A.B.C. differs from Table 6.3 of the N.B.C. in the designation of tank sizes. The T.A.B.C. presumably uses the trade designation (e.g. a "30-gallon" tank is presumably 30 U.S. gallons in capacity and equivalent to the 25-Imperial gallon tank specified in N.B.C.). The tables are essentially the same.

33. In the T.A.B.C. Stoves, Ranges, and Space Heaters (6.3.3.3) are to be installed according to Ontario Fuel Board Act 1954. In the N.B.C. (6.2.3.3) there are detailed clauses for mounting and clearances accompanied by a table (Table 6.4).

34. Under "Floor Furnaces" the T.A.B.C. (6.3.3.4) refers to C.S.A. B139 and B149. The N.B.C. should probably do likewise.

35. The N.B.C. (6.2.3.4.3) allows floor furnaces to be installed above the first story with certain specified provisions, whereas the T.A.B.C. leaves it up to the administrative official.

36. The clauses in T.A.B.C. and N.B.C. are different regarding

combustion air supply for floor furnaces (last paragraph of 6.3.3.4.5 in T.A.B.C. and of 6.2.3.4.5 in N.B.C.).

37. Fireplace construction differs in hearth dimensions. In the T.A.B.C. (6.3.3.5.2 paragraph 3) the hearth shall extend not less than 20 inches from chimney breast and not less than 18 inches beyond each side of the opening. In the N.B.C. (6.2.3.5.2 paragraph 3) these dimensions are 16 and 8 inches respectively.

38. Solid Fuel Storage Bins (6.3.3.6.2 in T.A.B.C.; 6.2.3.6.2 in N.B.C.). Paragraph (i) in N.B.C. is not in the T.A.B.C. Paragraphs (ii) and (iii) in N.B.C. use the word "should" whereas the T.A.B.C. uses "shall". The figure 80°F in paragraph (iii) N.B.C. is 120°F in T.A.B.C.

39. Ash Storage Bins (6.3.3.6.3 in T.A.B.C.; 6.2.3.6.3 in N.B.C.). The T.A.B.C. has a vent requirement which is not in the N.B.C.

40. The T.A.B.C. (6.3.3.6.5(a)) has no clause covering a combustion regulator for steam boilers as has the N.B.C.

41. The revised N.B.C. Section on Oil Firing (6.2.3.7) corresponding with T.A.B.C. 6.3.3.7 will likely refer to C.S.A. B139. Similarly the N.B.C. Section on Gas Firing (6.2.3.8) corresponding with T.A.B.C. 6.3.3.8 will likely refer to C.S.A. B149.

42. The T.A.B.C. section on Ducts for Ventilating, Heating and Air Cooling Systems (6.3.5) is much more elaborate than its N.B.C. counterparts (6.2.3.10.2) Ducts for Other Than One- and Two-Family Dwellings and (6.2.2.1) Ducts for Ventilating Systems. In revising the N.B.C. some T.A.B.C. clauses should probably be considered.

43. In the T.A.B.C., 6.3.5.8(b) Extinguishing Equipment is out of place and probably should go under Section 6.8 or a reference made under Air Filters to Section 6.8.

44. In the T.A.B.C. Item 6.3.5.11, Controls, should probably read "Fan Controls" or be incorporated under 6.3.5.10, Fans.

45. The N.B.C. has no equivalent of T.A.B.C. clause 6.3.5.13 but perhaps should have.

46. The T.A.B.C. has requirements (6.4.2.2) for chimney materials such as brick and mortar which are not in the N.B.C.

47. The N.B.C. Table 6.6 for chimney wall thicknesses and materials is replaced in the T.A.B.C. by 6.4.2.3 which is more detailed.

48. In the T.A.B.C. it seems as though chimney wall thicknesses given include the thickness of the liner, whereas in the N.B.C. the thicknesses refer to masonry or concrete wall material not including liner.

49. Heights of chimneys (6.4.2.6 in T.A.B.C. and 6.2.3.9.2(d) in N.B.C.) are different. There are other differences in chimney caps, clearances and corbelled chimneys.

50. The T.A.B.C. has a subsection for Isolated Radial Brick Chimneys (6.4.2.10) which is much more elaborate than N.B.C.'s Free Standing Chimneys (6.2.3.9.2(g)).

51. T.A.B.C. 6.4.3 on Smokestacks is essentially the same as N.B.C. 6.2.3.9.3 with some minor differences.

52. T.A.B.C. 6.4.4 on Flues and 6.4.5.5 Smokepipes differ somewhat from N.B.C. 6.2.3.9.5 and 6.2.3.9.6, particularly with regard to the tables.

53. Incinerators, Section 6.5 T.A.B.C. is considerably less detailed than N.B.C. Section 6.3 and refers to Rules and Regulations for Incinerators of the Air Pollution Control Division, Metropolitan Department of Works, The Department of Health, and also to subsection 3.4.10 of the T.A.B.C. for location and enclosure.

54. The T.A.B.C. Section 6.5 does not differentiate between non-fuel-fired and fuel-fired incinerators as does N.B.C. Section 6.3. Thicknesses of combustion chamber walls and linings differ in the two Codes.

55. Electrical Equipment, Installations and Wiring; Section 6.6 T.A.B.C. refers to H.E.P.C. of Ontario while Section 6.4 N.B.C. uses the C.S.A. Canadian Electrical Code Part 1.

56. Elevators and Escalators, Section 6.7 of the T.A.B.C. refers to the Elevator and Lift Act 1953 of the Province of Ontario whereas the N.B.C. Section 6.5 uses the C.S.A. Safety Code for Passenger and Freight Elevators, B44-1951.

57. Fire Extinguishing Equipment, Section 6.8 of T.A.B.C. has specific regulations regarding standpipe systems, water pressure, pumper connections, pipes, valves, hose, couplings, hand extinguishers and fire alarms, the locations, size, number and type being subject to the approval of the Chief of the Fire Department. Section 6.6 N.B.C. covers sprinkler systems specifically and refers to pamphlet No. 13 of the N.F.P.A. International.

58. Flammable Liquids and Gases, Section 6.9 T.A.B.C. has no equivalent section in the N.B.C.