

TABLE 2. TEMPERATURE AND DRAFT IN 9 IN. BY 9 IN. MASONRY CHIMNEY<sup>a</sup>

| CHIMNEY HEIGHT, FT |                            | FUEL OIL EQUIVALENT <sup>a</sup><br>OF CHIMNEY GASES |                             | FLUE GAS<br>TEMP. AT<br>INLET, F | AVERAGE<br>CHIMNEY<br>GAS TEMP.<br>F | OUTSIDE<br>TEMP.<br>F | OBSERVED<br>DRAFT<br>INCH<br>WATER | COMPUTED<br>STATIC<br>DRAFT<br>INCH<br>WATER | CORRECTED DRAFT <sup>b</sup> |                                  | INDICATED<br>FRICTION<br>LOSS<br>INCH<br>WATER |
|--------------------|----------------------------|------------------------------------------------------|-----------------------------|----------------------------------|--------------------------------------|-----------------------|------------------------------------|----------------------------------------------|------------------------------|----------------------------------|------------------------------------------------|
| Nominal            | Height<br>Above<br>Thimble | Fuel Oil<br>Gal/Hr                                   | CO <sub>2</sub><br>Per Cent |                                  |                                      |                       |                                    |                                              | Observed<br>Inch<br>Water    | Computed<br>Static<br>Inch Water |                                                |
| 35                 | 31.5                       | 0.5                                                  | 10                          | 238                              | 142                                  | 68                    | 0.040                              | 0.053                                        | 0.078                        | 0.089                            | +0.013                                         |
| 35                 | 31.5                       | 1.5                                                  | 8                           | 200                              | 158                                  | 81                    | 0.043                              | 0.055                                        | 0.086                        | 0.098                            | +0.012                                         |
| 35                 | 31.5                       | 0.5                                                  | 10                          | 400                              | 224                                  | 77                    | 0.081                              | 0.095                                        | 0.128                        | 0.142                            | +0.014                                         |
| 35                 | 31.5                       | 1.5                                                  | 8                           | 400                              | 278                                  | 80                    | 0.092                              | 0.117                                        | 0.139                        | 0.164                            | +0.025                                         |
| 35                 | 31.5                       | 0.5                                                  | 10                          | 1000                             | 488                                  | 77                    | 0.163                              | 0.191                                        | 0.206                        | 0.234                            | +0.028                                         |
| 35                 | 31.5                       | 1.5                                                  | 8                           | 1000                             | 601                                  | 78                    | 0.169                              | 0.214                                        | 0.216                        | 0.261                            | +0.045                                         |
| 30                 | 27.5                       | 0.5                                                  | 10                          | 250                              | 180                                  | 83                    | 0.043                              | 0.049                                        | 0.070                        | 0.076                            | +0.006                                         |
| 30                 | 27.5                       | 1.5                                                  | 8                           | 250                              | 195                                  | 84                    | 0.055                              | 0.064                                        | 0.097                        | 0.106                            | +0.009                                         |
| 30                 | 27.5                       | 0.5                                                  | 10                          | 400                              | 213                                  | 68                    | 0.075                              | 0.084                                        | 0.107                        | 0.116                            | +0.009                                         |
| 30                 | 27.5                       | 1.5                                                  | 8                           | 400                              | 269                                  | 72                    | 0.094                              | 0.108                                        | 0.125                        | 0.139                            | +0.014                                         |
| 30                 | 27.5                       | 0.5                                                  | 10                          | 1000                             | 460                                  | 64                    | 0.146                              | 0.169                                        | 0.174                        | 0.197                            | +0.023                                         |
| 30                 | 27.5                       | 1.5                                                  | 8                           | 1000                             | 608                                  | 72                    | 0.168                              | 0.193                                        | 0.204                        | 0.228                            | +0.025                                         |
| 25                 | 22.3                       | 0.5                                                  | 10                          | 250                              | 171                                  | 92                    | 0.034                              | 0.037                                        | 0.072                        | 0.076                            | +0.003                                         |
| 25                 | 22.3                       | 1.5                                                  | 8                           | 200                              | 171                                  | 94                    | 0.034                              | 0.036                                        | 0.074                        | 0.076                            | +0.002                                         |
| 25                 | 22.3                       | 0.5                                                  | 10                          | 400                              | 243                                  | 78                    | 0.066                              | 0.073                                        | 0.097                        | 0.105                            | +0.008                                         |
| 25                 | 22.3                       | 1.5                                                  | 8                           | 400                              | 301                                  | 79                    | 0.085                              | 0.091                                        | 0.116                        | 0.123                            | +0.006                                         |
| 25                 | 22.3                       | 0.5                                                  | 10                          | 1000                             | 504                                  | 79                    | 0.124                              | 0.137                                        | 0.154                        | 0.167                            | +0.013                                         |
| 25                 | 22.3                       | 1.5                                                  | 8                           | 1000                             | 642                                  | 80                    | 0.146                              | 0.169                                        | 0.177                        | 0.190                            | +0.013                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 250                              | 179                                  | 94                    | 0.029                              | 0.032                                        | 0.059                        | 0.062                            | +0.003                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 200                              | 188                                  | 94                    | 0.031                              | 0.032                                        | 0.059                        | 0.060                            | +0.001                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 400                              | 270                                  | 81                    | 0.058                              | 0.062                                        | 0.082                        | 0.086                            | +0.004                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 400                              | 297                                  | 55                    | 0.075                              | 0.081                                        | 0.087                        | 0.093                            | +0.006                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 600                              | 330                                  | 55                    | 0.086                              | 0.091                                        | 0.095                        | 0.100                            | +0.005                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 800                              | 425                                  | 37                    | 0.104                              | 0.106                                        | 0.116                        | 0.118                            | +0.002                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 1000                             | 528                                  | 37                    | 0.120                              | 0.130                                        | 0.123                        | 0.134                            | +0.010                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 915                              | 588                                  | 44                    | 0.129                              | 0.134                                        | 0.135                        | 0.141                            | +0.005                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 250                              | 182                                  | 87                    | 0.023                              | 0.023                                        | 0.041                        | 0.041                            | +0.000                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 200                              | 180                                  | 84                    | 0.025                              | 0.024                                        | 0.042                        | 0.041                            | -0.001                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 400                              | 258                                  | 32                    | 0.053                              | 0.055                                        | 0.054                        | 0.056                            | +0.002                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 400                              | 293                                  | 43                    | 0.056                              | 0.057                                        | 0.060                        | 0.061                            | +0.001                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 600                              | 369                                  | 34                    | 0.068                              | 0.071                                        | 0.069                        | 0.071                            | +0.003                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 800                              | 428                                  | 40                    | 0.072                              | 0.076                                        | 0.075                        | 0.078                            | +0.004                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 1000                             | 577                                  | 32                    | 0.094                              | 0.092                                        | 0.094                        | 0.092                            | -0.002                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 1000                             | 654                                  | 55                    | 0.092                              | 0.090                                        | 0.100                        | 0.098                            | -0.002                                         |

<sup>a</sup>Actual inside dimensions of flue lining 7¼ × 7¼ in.<sup>b</sup>Corrected for outside temperature 32 F. Barometer 29.92 in. Hg.<sup>c</sup>¼ gal per hour of fuel oil burned with 10 per cent CO<sub>2</sub> produces 18.4 cfm or 1.38 lb per minute of flue gases (corrected to 70 F, 1 atmosphere pressure); 1½ gal per hour of fuel oil burned with 8 per cent CO<sub>2</sub> produces 67.5 cfm or 5.06 lb per minute of flue gas (corrected to 70 F, 1 atmosphere pressure).TABLE 3. TEMPERATURE AND DRAFT IN 9 IN. BY 13 IN. MASONRY CHIMNEY<sup>a</sup>

| CHIMNEY HEIGHT, FT |                            | FUEL OIL EQUIVALENT <sup>a</sup><br>OF CHIMNEY GASES |                             | FLUE GAS<br>TEMP. AT<br>INLET, F | AVERAGE<br>CHIMNEY<br>GAS TEMP.<br>F | OUTSIDE<br>TEMP.<br>F | OBSERVED<br>DRAFT<br>INCH<br>WATER | COMPUTED<br>STATIC<br>DRAFT<br>INCH<br>WATER | CORRECTED DRAFT <sup>b</sup> |                                  | INDICATED<br>FRICTION<br>LOSS<br>INCH<br>WATER |
|--------------------|----------------------------|------------------------------------------------------|-----------------------------|----------------------------------|--------------------------------------|-----------------------|------------------------------------|----------------------------------------------|------------------------------|----------------------------------|------------------------------------------------|
| Nominal            | Height<br>Above<br>Thimble | Fuel Oil<br>Gal/Hr                                   | CO <sub>2</sub><br>Per Cent |                                  |                                      |                       |                                    |                                              | Observed<br>Inch<br>Water    | Computed<br>Static<br>Inch Water |                                                |
| 35                 | 31.5                       | 0.5                                                  | 10                          | 204                              | 125                                  | 78                    | 0.035                              | 0.034                                        | 0.078                        | 0.077                            | -0.001                                         |
| 35                 | 31.5                       | 1.5                                                  | 8                           | 206                              | 155                                  | 82                    | 0.047                              | 0.052                                        | 0.093                        | 0.098                            | +0.005                                         |
| 35                 | 31.5                       | 0.5                                                  | 10                          | 600                              | 355                                  | 84                    | 0.140                              | 0.141                                        | 0.193                        | 0.194                            | +0.001                                         |
| 35                 | 31.5                       | 1.5                                                  | 8                           | 600                              | 372                                  | 78                    | 0.104                              | 0.117                                        | 0.152                        | 0.165                            | +0.013                                         |
| 35                 | 31.5                       | 0.5                                                  | 10                          | 1000                             | 438                                  | 77                    | 0.163                              | 0.178                                        | 0.205                        | 0.221                            | +0.015                                         |
| 35                 | 31.5                       | 1.5                                                  | 8                           | 1000                             | 542                                  | 84                    | 0.189                              | 0.201                                        | 0.236                        | 0.247                            | +0.012                                         |
| 30                 | 27.5                       | 0.5                                                  | 10                          | 260                              | 155                                  | 83                    | 0.040                              | 0.045                                        | 0.081                        | 0.086                            | +0.005                                         |
| 30                 | 27.5                       | 1.5                                                  | 8                           | 202                              | 159                                  | 83                    | 0.048                              | 0.047                                        | 0.089                        | 0.088                            | -0.001                                         |
| 30                 | 27.5                       | 0.5                                                  | 10                          | 605                              | 278                                  | 80                    | 0.089                              | 0.103                                        | 0.129                        | 0.144                            | +0.014                                         |
| 30                 | 27.5                       | 1.5                                                  | 8                           | 595                              | 378                                  | 72                    | 0.130                              | 0.144                                        | 0.161                        | 0.175                            | +0.014                                         |
| 30                 | 27.5                       | 0.5                                                  | 10                          | 1007                             | 438                                  | 91                    | 0.135                              | 0.148                                        | 0.179                        | 0.191                            | +0.013                                         |
| 30                 | 27.5                       | 1.5                                                  | 8                           | 995                              | 609                                  | 89                    | 0.166                              | 0.168                                        | 0.225                        | 0.227                            | +0.002                                         |
| 25                 | 22.3                       | 0.5                                                  | 10                          | 258                              | 155                                  | 88                    | 0.034                              | 0.034                                        | 0.069                        | 0.069                            | 0.000                                          |
| 25                 | 22.3                       | 1.5                                                  | 8                           | 200                              | 160                                  | 86                    | 0.039                              | 0.037                                        | 0.074                        | 0.072                            | -0.002                                         |
| 25                 | 22.3                       | 0.5                                                  | 10                          | 600                              | 312                                  | 86                    | 0.086                              | 0.090                                        | 0.122                        | 0.126                            | +0.004                                         |
| 25                 | 22.3                       | 1.5                                                  | 8                           | 592                              | 382                                  | 83                    | 0.106                              | 0.110                                        | 0.140                        | 0.144                            | +0.004                                         |
| 25                 | 22.3                       | 0.5                                                  | 10                          | 1007                             | 462                                  | 85                    | 0.120                              | 0.127                                        | 0.154                        | 0.161                            | +0.007                                         |
| 25                 | 22.3                       | 1.5                                                  | 8                           | 1007                             | 607                                  | 84                    | 0.151                              | 0.153                                        | 0.184                        | 0.185                            | +0.002                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 280                              | 175                                  | 79                    | 0.030                              | 0.028                                        | 0.062                        | 0.060                            | -0.002                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 250                              | 192                                  | 81                    | 0.044                              | 0.041                                        | 0.069                        | 0.066                            | -0.003                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 598                              | 324                                  | 74                    | 0.069                              | 0.079                                        | 0.099                        | 0.115                            | +0.010                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 604                              | 410                                  | 74                    | 0.090                              | 0.094                                        | 0.111                        | 0.115                            | +0.004                                         |
| 20                 | 17.2                       | 0.5                                                  | 10                          | 1015                             | 496                                  | 79                    | 0.094                              | 0.107                                        | 0.115                        | 0.128                            | +0.013                                         |
| 20                 | 17.2                       | 1.5                                                  | 8                           | 1000                             | 645                                  | 74                    | 0.122                              | 0.127                                        | 0.140                        | 0.147                            | +0.005                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 270                              | 172                                  | 88                    | 0.022                              | 0.021                                        | 0.041                        | 0.040                            | -0.001                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 200                              | 166                                  | 85                    | 0.022                              | 0.020                                        | 0.040                        | 0.038                            | -0.002                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 604                              | 356                                  | 86                    | 0.055                              | 0.052                                        | 0.073                        | 0.070                            | -0.003                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 599                              | 431                                  | 84                    | 0.066                              | 0.062                                        | 0.082                        | 0.078                            | -0.004                                         |
| 15                 | 11.3                       | 0.5                                                  | 10                          | 1000                             | 560                                  | 82                    | 0.066                              | 0.074                                        | 0.082                        | 0.091                            | +0.008                                         |
| 15                 | 11.3                       | 1.5                                                  | 8                           | 1000                             | 682                                  | 85                    | 0.083                              | 0.082                                        | 0.101                        | 0.100                            | -0.001                                         |

<sup>a</sup>Actual inside dimensions of flue lining 6¼ × 11 in.<sup>b</sup>Corrected for outside temperature 32 F. Barometer 29.92 in. Hg.<sup>c</sup>¼ gal per hour of fuel oil burned with 10 per cent CO<sub>2</sub> produces 18.4 cfm or 1.38 lb per minute of flue gases (corrected to 70 F, 1 atmosphere pressure); 1½ gal per hour of fuel oil burned with 8 per cent CO<sub>2</sub> produces 67.5 cfm or 5.06 lb per minute of flue gas (corrected to 70 F, 1 atmosphere pressure).