

# JIS

## JAPANESE INDUSTRIAL STANDARD

### Steel Decks

### JIS G 3352 — 1979

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,  
the original Standard in Japanese is to be final authority.

## JAPANESE INDUSTRIAL STANDARD

J I S

## Steel Decks

G 3352-1979  
(Reaffirmed: 1994)1. Scope

This Japanese Industrial Standard specifies cold formed steel decks, hereinafter referred to as the "deck plates", to be used to structures for architecture, civil engineering, rolling stocks and others.

2. Classification, Symbols and Materials

The deck plates shall be classified into five types, and the type symbols and materials shall be as given in Tables 1 and 2.

Table 1. Type Symbols and Materials

| Type symbol | Material                                                                                 |
|-------------|------------------------------------------------------------------------------------------|
| SDP 1       | Class 1 (SPHC) steel strip of JIS G 3131 and<br>Class 1 (SPCC) steel strip of JIS G 3141 |
| SDP 2       | Class 2 (SS 41) steel strip of JIS G 3101                                                |
| SDP 3       | Steel strip of JIS G 3125                                                                |

Remarks 1. The purchaser may specify the yield point of the material to be used for SDP 1 as 21 kgf/mm<sup>2</sup> {206 N/mm<sup>2</sup>} or over and the tensile strength as 30 kgf/mm<sup>2</sup> {294 N/mm<sup>2</sup>} or over. In this case, a letter T shall be suffixed to the type symbol.

Example: SDP1T

2. In this standard, units and numerical values given in { } are in accordance with the International System of Units (SI), and are supplemented for reference.

## Applicable Standards:

JIS G 3101-Rolled Steel for General Structure

JIS G 3125-Superior Atmospheric Corrosion Resisting Rolled Steels

JIS G 3131-Hot-Rolled Mild Steel Plates, Sheets and Strip

JIS G 3141-Cold Rolled Carbon Steel Sheets and Strip

JIS G 3302-Galvanized Sheets

JIS H 0401-Methods of Test for Zinc Coating (Hot-Dipped) on Iron or Steel

JIS Z 8401-Rules for Rounding off of Numerical Values

Table 2. Type Symbols and Materials (Galvanized)

| Type symbol |   | Material                                                                                                    | Weight of zinc coating                |                                              |
|-------------|---|-------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------|
|             |   |                                                                                                             | Marking symbol of zinc coating weight | Minimum zinc coating weight g/m <sup>2</sup> |
| SDP 1 G     | A | Galvanized Class 1 (SPHC) steel strip of JIS G 3131 and galvanized Class 1 (SPCC) steel strip of JIS G 3141 | Z 12                                  | 120                                          |
|             | B |                                                                                                             | Z 27                                  | 275                                          |
| SDP 2 G     | A | Galvanized Class 2 (SS 41) steel strip of JIS G 3101                                                        | Z 12                                  | 120                                          |
|             | B |                                                                                                             | Z 27                                  | 275                                          |

Remarks 1. The minimum zinc coating weight means the minimum weight of zinc coating adhered to both faces of a steel strip, and it applies to the mean value of measurements for three test pieces taken from a specimen plate.

2. The measurement of the minimum zinc coating weight shall follow the antimony-chloride method (indirect method) - triple spot method specified in JIS H 0401 or fluorescent X-ray method specified in JIS G 3302.

### 3. Manufacturing Method

The deck plates shall be manufactured from the materials specified in 2. by cold roll forming.

### 4. Appearance

The deck plates shall be free from any defects harmful to use.

### 5. Shapes, Dimensions and Weight and Tolerance Thereof

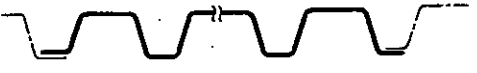
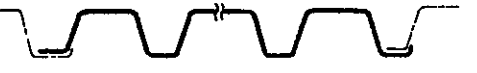
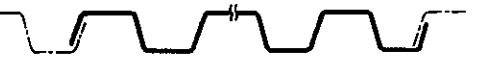
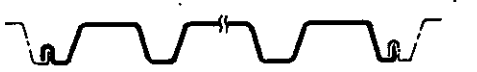
Remark: The term "weight" used in this standard means "mass".

5.1 Sectional shapes and end shapes of the deck plates shall be as shown in Tables 3.1 and 3.2, and they shall be as combined in Attached Table 1.

**Table 3.1. Sectional Shapes**

| Symbol | Sectional shape showing a pair of crest and groove                                |
|--------|-----------------------------------------------------------------------------------|
| A      |  |
| B      |  |
| D      |  |

**Table 3.2. End Shapes**

| Symbol | End shape                                                                          |
|--------|------------------------------------------------------------------------------------|
| K      |  |
| L      |  |
| M      |  |
| N      |  |
| P      |  |
| Q      |  |
| R      |  |

5.2 Designation, sectional dimensions and weight shall conform to Attached Table 1. In this table, thickness (t) of the galvanized deck plates shall be expressed in thickness of the black plates.

Radius of curvature at corner shall generally be 1.5 t at the centre line of the thickness (t).

5.3 The standard length of the deck plates shall conform to Table 4.

**Table 4. Standard Length**

| Unit: m |     |     |     |      |      |      |
|---------|-----|-----|-----|------|------|------|
| 6.0     | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 |

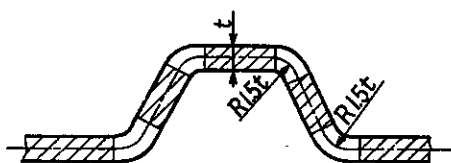
5.4 The tolerance on the shapes and dimensions of the deck plates shall conform to Table 5. To thickness, however, of galvanized deck plates, indicated thickness of the black plates applies subject to the addition of the equivalent coating thickness specified in Table 6 to it.

Table 5. Tolerance on Shapes and Dimensions

| Item                               |                                                       | Tolerance                                                                                       |                   |        |         |         |                                                                                        |  | Unit: mm |
|------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------|--------|---------|---------|----------------------------------------------------------------------------------------|--|----------|
| Height (H)                         |                                                       | + 1.5                                                                                           |                   |        |         |         |                                                                                        |  |          |
| Width                              |                                                       | (W)                                                                                             | + 5               |        |         |         |                                                                                        |  |          |
|                                    |                                                       | (W <sub>0</sub> )                                                                               | + 8<br>- 2        |        |         |         |                                                                                        |  |          |
| Indicated thickness of black plate | Type                                                  | SDP 1                                                                                           |                   | SDP 2  | SDP 3   |         | SDP 1 G<br>SDP 2 G                                                                     |  |          |
|                                    |                                                       | JIS G 3131 (SPHC)                                                                               | JIS G 3141 (SPCC) |        | (SPA-H) | (SPA-C) |                                                                                        |  |          |
| Thickness of flat portion (t)      | 0.8                                                   | -                                                                                               | + 0.09            | -      | + 0.20  | + 0.09  | Add + 0.02 to tolerance of SDP 1 or SDP 2 according to type of black plate to be used. |  |          |
|                                    | 1.0                                                   | -                                                                                               | + 0.10            | -      | + 0.20  | + 0.10  |                                                                                        |  |          |
|                                    | 1.2                                                   | + 0.16                                                                                          | + 0.10            | + 0.20 | + 0.20  | + 0.10  |                                                                                        |  |          |
|                                    | 1.4, 1.5                                              | + 0.17                                                                                          | + 0.12            | + 0.22 | + 0.22  | + 0.12  |                                                                                        |  |          |
|                                    | 1.6                                                   | + 0.20                                                                                          | + 0.14            | + 0.25 | + 0.25  | + 0.14  |                                                                                        |  |          |
|                                    | 2.3                                                   | + 0.23                                                                                          | + 0.16            | + 0.28 | + 0.28  | + 0.16  |                                                                                        |  |          |
|                                    | 2.7                                                   | + 0.27                                                                                          | + 0.18            | + 0.32 | + 0.32  | -       |                                                                                        |  |          |
|                                    | 3.2                                                   | + 0.31                                                                                          | + 0.20            | + 0.35 | + 0.35  | -       |                                                                                        |  |          |
|                                    | 4.0, 4.5                                              | + 0.35                                                                                          | -                 | + 0.50 | + 0.50  | -       |                                                                                        |  |          |
|                                    | 6.0                                                   | + 0.50                                                                                          | -                 | + 0.60 | + 0.60  | -       |                                                                                        |  |          |
| Length                             | 7 m max.                                              | + 40<br>0                                                                                       |                   |        |         |         |                                                                                        |  |          |
|                                    | Exceeding 7 m                                         | Add 5 mm to above plus side tolerance for every increment of 1 m or fraction thereof in length. |                   |        |         |         |                                                                                        |  |          |
| Lateral bow                        | Lateral bow in longitudinal direction of flat portion | 0.2 % or under of overall length                                                                |                   |        |         |         |                                                                                        |  |          |

- Remarks 1. The measurement of the sectional dimensions shall be positioned at an arbitrary point excluding both ends of the deck plate.
2. The flat portion means such shaded portions as shown in Figure.

Figure



3. The lateral bow means the overall lateral bow in longitudinal direction, when the deck plate is placed horizontally.
4. An applicable tolerance on thickness of galvanized deck plate shown for example:

For SDP 1 GA manufactured of SPHC black plate of indicated thickness 1.2 mm,  $1.226 \pm 0.18$ .

Table 6. Equivalent Thickness of Coating

| Marking symbol of coating weight   | Z 12  | Z 27  |
|------------------------------------|-------|-------|
| Equivalent thickness of coating mm | 0.026 | 0.054 |

Remark: The equivalent thickness of coating is obtained as the quotient of the zinc coating weight given in Table 8 divided by the density  $7.1 \text{ g/cm}^3$  and then rounded off to three places of decimals in accordance with JIS Z 8401.

## 5.5 Calculating Method of Weight

5.5.1 The weight of the deck plate shall generally be based on the calculated weight expressed in kilogrammes.

5.5.2 The calculating method for weight of the deck plate shall be as described in Table 7, and, in this case, the dimensions shall be based on the indicated dimensions.

Table 7. Calculating Method of Weight

| Sequence of calculation                      |                                                   | Calculating method                                                                      | Value to be obtained                                  |
|----------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------|
| Basic weight $\text{kg/mm} \cdot \text{m}^2$ |                                                   | 7.85 (weight of 1 mm thickness and 1 $\text{m}^2$ in area)                              | —                                                     |
| Unit weight $\text{kg/m}^2$                  |                                                   | Basic weight ( $\text{kg/mm} \cdot \text{m}^2$ )<br>x thickness of plate (mm)           | To be rounded off to a value of 4 significant figures |
| Developed width m                            |                                                   | Developed width (mm)<br>obtained from formula of Attached Table 2 x $10^{-3}$           | To be rounded off to a value of 4 significant figures |
| As rolled                                    | Unit weight of product $\text{kg/m}$              | Unit weight ( $\text{kg/m}^2$ )<br>x developed width (m)                                | To be rounded off to a value of 3 significant figures |
| Galvanized product                           | Zinc coating weight $\text{g/m}^2$                | Conforming to zinc coating weight of Table 8                                            | —                                                     |
|                                              | Unit weight of galvanized product $\text{kg/m}^2$ | Unit weight ( $\text{kg/m}^2$ )<br>+ zinc coating weight ( $\text{g/m}^2$ ) x $10^{-3}$ | To be rounded off to a value of 4 significant figures |
|                                              | Unit weight of product $\text{kg/m}^2$            | Unit weight of galvanized product ( $\text{kg/m}^2$ )<br>x developed width (m)          | To be rounded off to a value of 3 significant figures |
| Weight per sheet kg                          |                                                   | Unit weight of product ( $\text{kg/m}$ ) x length (m)                                   | To be rounded off to a value of 3 significant figures |
| Gross weight kg                              |                                                   | Weight per sheet (kg) x total number of sheets of same dimensions                       | To be rounded off to an integer of kg                 |

Remark: Rounding off of the numerical values shall follow the rule provided in JIS Z 8401.

Table 8. Zinc Coating Weight to Be Used for Calculation of Weight

| Marking symbol of zinc coating weight | Z 12 | Z 27 |
|---------------------------------------|------|------|
| Zinc coating weight $\text{g/m}^2$    | 183  | 381  |

**5.6 Tolerance on Weight** The tolerance on weight of the deck plate applies only when specified by the purchaser, and the tolerances in this case shall be as specified in Table 9. In this case, the tolerance shall be expressed in the quotient, in percentage, of the difference between the calculated weight and the actually measured weight divided by the calculated weight.

Table 9. Tolerance on Weight

| Calculated weight of one set | Tolerance % | Remark                                                                                                                                                      |
|------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Under 600 kg                 | $\pm 10$    | Applicable to a set of products of the same material, same coating weight (only when for galvanized deck plates), same sectional shape and same dimensions. |
| 600 kg to 2 t excl.          | $\pm 7.5$   |                                                                                                                                                             |
| 2 t and over                 | $\pm 5$     |                                                                                                                                                             |

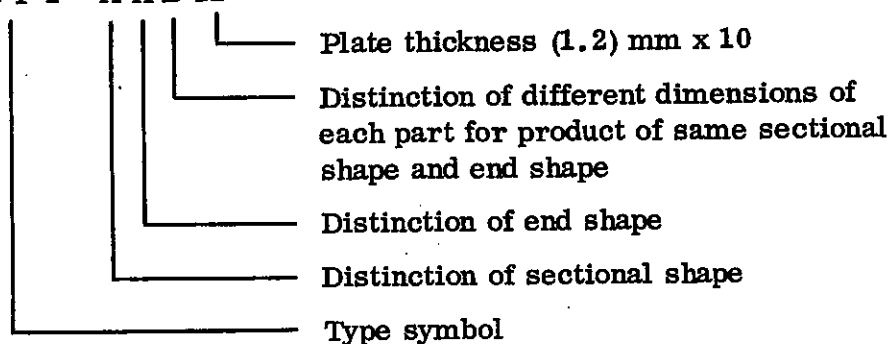
## 6. Inspection

The deck plates shall be inspected on the appearance, shapes, dimensions and weight, and the results shall conform to the requirements of 4. and 5.

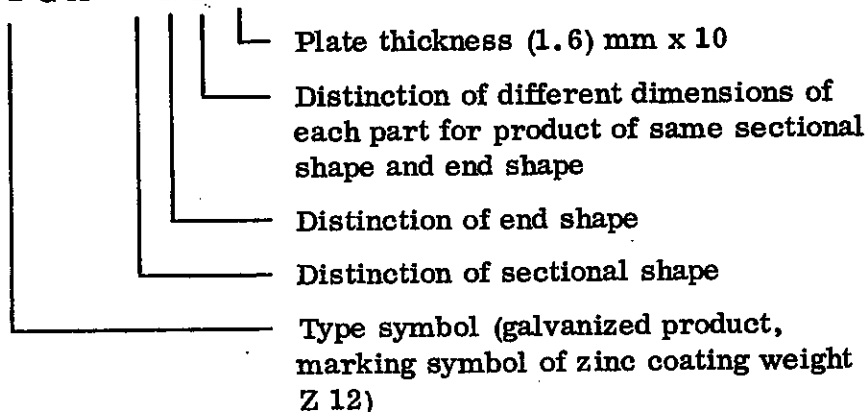
## 7. Designation

The deck plates shall be designated by the type symbols and designation.

Examples 1. S D P 1 - A K D 12



2. S D P 1 G A - A L B 16



## 8. Marking

The deck plates which have passed the inspection shall be clearly marked with the following particulars on every bundle by a suitable means.

In addition, each product shall be marked with the type symbol and the manufacturer's name or its abbreviation by a suitable means.

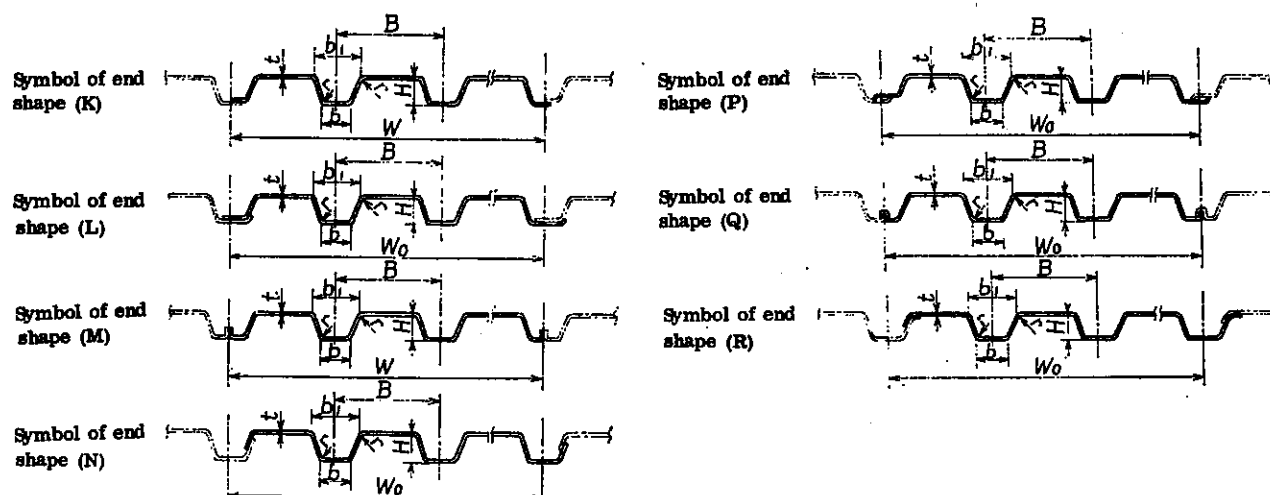
- (1) Type symbol
- (2) Designation
- (3) Length
- (4) Quantity of each bundle
- (5) Marking symbol of zinc coating weight
- (6) Manufacturer's name or its abbreviation

The above items, however, may be omitted, when approved by the purchaser.

## 9. Report

Upon the request of the purchaser, the manufacturer shall submit the report stating the test results of the material used.

Attached Table 1. Designation, Sectional Dimensions and Weight of Deck Plates



| Designation | Symbol of sectional shape | Dimensions mm |       |                |                      |                               |                                           |                |                                   | Symbol of end shape | Calculating formula for developed width<br>No. | Per one sheet         |                                   |             |      |      |
|-------------|---------------------------|---------------|-------|----------------|----------------------|-------------------------------|-------------------------------------------|----------------|-----------------------------------|---------------------|------------------------------------------------|-----------------------|-----------------------------------|-------------|------|------|
|             |                           | Height<br>H   | Width |                | Pitch of groove<br>B | Dimension of groove base<br>b | Dimension of groove top<br>b <sub>1</sub> | Thickness<br>t | Inside radius of corner part<br>r |                     |                                                | Developed width<br>mm | Sectional area<br>cm <sup>2</sup> | Weight kg/m |      |      |
|             |                           |               | W     | W <sub>0</sub> |                      |                               |                                           |                |                                   |                     |                                                |                       |                                   | As rolled   | Z 12 | Z 27 |
| AKA 12      | A                         | 13            | 1055  | —              | 71                   | 33                            | 46                                        | 1.2            | 8.8                               | K                   | 1                                              | 1188                  | 14.26                             | 11.2        | 11.4 | 11.6 |
| AKA 16      | A                         | 13            | 1055  | —              | 71                   | 33                            | 46                                        | 1.6            | 8.4                               | K                   | 1                                              | 1181                  | 18.90                             | 14.8        | 15.0 | 15.3 |
| AKB 08      | A                         | 15            | 1032  | —              | 78                   | 25                            | 38                                        | 0.8            | 9.2                               | K                   | 1                                              | 1196                  | 9.569                             | 7.51        | 7.73 | 7.97 |
| AKB 12      | A                         | 15            | 1032  | —              | 78                   | 25                            | 38                                        | 1.2            | 8.8                               | K                   | 1                                              | 1190                  | 14.27                             | 11.2        | 11.4 | 11.7 |
| AKB 14      | A                         | 15            | 1032  | —              | 78                   | 25                            | 38                                        | 1.4            | 8.6                               | K                   | 1                                              | 1186                  | 16.61                             | 13.0        | 13.3 | 13.5 |
| AKC 08      | A                         | 25            | 830   | —              | 90                   | 40                            | 50                                        | 0.8            | 1 t                               | K                   | 1                                              | 1165                  | 9.322                             | 7.32        | 7.53 | 7.76 |
| AKC 12      | A                         | 25            | 830   | —              | 90                   | 40                            | 50                                        | 1.2            | 1 t                               | K                   | 1                                              | 1149                  | 13.79                             | 10.8        | 11.0 | 11.3 |
| AKD 08      | A                         | 25            | 650   | —              | 90                   | 40                            | 50                                        | 0.8            | 1 t                               | K                   | 1                                              | 910.7                 | 7.286                             | 5.72        | 5.89 | 6.07 |
| AKD 10      | A                         | 25            | 650   | —              | 90                   | 40                            | 50                                        | 1.0            | 1 t                               | K                   | 1                                              | 904.5                 | 9.045                             | 7.10        | 7.27 | 7.44 |
| AKD 12      | A                         | 25            | 650   | —              | 90                   | 40                            | 50                                        | 1.2            | 1 t                               | K                   | 1                                              | 898.4                 | 10.78                             | 8.46        | 8.63 | 8.81 |
| ALA 16      | A                         | 50            | —     | 800            | 200                  | 60                            | 74                                        | 1.6            | 1 t                               | L                   | 1                                              | 1144                  | 18.30                             | 14.4        | 14.6 | 14.8 |
| ALB 12      | A                         | 50            | —     | 614            | 204.7                | 38.6                          | 58.6                                      | 1.2            | 1 t                               | L                   | 3                                              | 872.0                 | 10.46                             | 8.21        | 8.37 | 8.55 |

Attached Table 1 (Continued)

| Designation | Symbol of sectional shape | Dimensions mm |       |                |                      |                               |                                           |                |                                   |                       | Symbol of end shape | Calculating formula for developed width<br>No. | Per one sheet                     |             |      |      |  |
|-------------|---------------------------|---------------|-------|----------------|----------------------|-------------------------------|-------------------------------------------|----------------|-----------------------------------|-----------------------|---------------------|------------------------------------------------|-----------------------------------|-------------|------|------|--|
|             |                           | Height<br>H   | Width |                | Pitch of groove<br>B | Dimension of groove base<br>b | Dimension of groove top<br>b <sub>1</sub> | Thickness<br>t | Inside radius of corner part<br>r | Developed width<br>mm |                     |                                                | Sectional area<br>cm <sup>2</sup> | Weight kg/m |      |      |  |
|             |                           |               | W     | W <sub>0</sub> |                      |                               |                                           |                |                                   |                       |                     |                                                |                                   | As rolled   | Z 12 | Z 27 |  |
| ALB 16      | A                         | 50            | —     | 614            | 204.7                | 38.6                          | 58.6                                      | 1.6            | 1 t                               | L                     | 3                   | 866.1                                          | 13.86                             | 10.9        | 11.0 | 11.2 |  |
| ALC 12      | A                         | 50            | —     | 614            | 205                  | 40                            | 60                                        | 1.2            | 1 t                               | L                     | 3                   | 872.9                                          | 10.47                             | 8.22        | 8.38 | 8.56 |  |
| ALC 16      | A                         | 50            | —     | 614            | 205                  | 40                            | 60                                        | 1.6            | 1 t                               | L                     | 3                   | 867.0                                          | 13.87                             | 10.9        | 11.0 | 11.2 |  |
| ALD 12      | A                         | 50            | —     | 614            | 205                  | 50                            | 70                                        | 1.2            | 1 t                               | L                     | 3                   | 872.9                                          | 10.47                             | 8.22        | 8.38 | 8.56 |  |
| ALD 16      | A                         | 50            | —     | 614            | 205                  | 50                            | 70                                        | 1.6            | 1 t                               | L                     | 3                   | 867.0                                          | 13.87                             | 10.9        | 11.0 | 11.2 |  |
| ALE 12      | A                         | 50            | —     | 614            | 205                  | 92.5                          | 112.5                                     | 1.2            | 1 t                               | L                     | 3                   | 872.9                                          | 10.47                             | 8.22        | 8.38 | 8.56 |  |
| ALE 16      | A                         | 50            | —     | 614            | 205                  | 92.5                          | 112.5                                     | 1.6            | 1 t                               | L                     | 3                   | 867.0                                          | 13.87                             | 10.9        | 11.0 | 11.2 |  |
| ALF 12      | A                         | 50            | —     | 614            | 204.7                | 90                            | 110                                       | 1.2            | 1 t                               | L                     | 3                   | 872.0                                          | 10.46                             | 8.21        | 8.37 | 8.55 |  |
| ALF 16      | A                         | 50            | —     | 614            | 204.7                | 90                            | 110                                       | 1.6            | 1 t                               | L                     | 3                   | 866.1                                          | 13.86                             | 10.9        | 11.0 | 11.2 |  |
| ALG 12      | A                         | 60            | —     | 600            | 200                  | 80                            | 100                                       | 1.2            | 1 t                               | L                     | 3                   | 930.9                                          | 11.17                             | 8.77        | 8.94 | 9.12 |  |
| ALG 16      | A                         | 60            | —     | 600            | 200                  | 80                            | 100                                       | 1.6            | 1 t                               | L                     | 3                   | 924.7                                          | 14.79                             | 11.6        | 11.8 | 12.0 |  |
| ALH 12      | A                         | 75            | —     | 600            | 200                  | 58                            | 65                                        | 1.2            | 1 t                               | L                     | 3                   | 1046                                           | 12.55                             | 9.85        | 10.0 | 10.3 |  |
| ALH 16      | A                         | 75            | —     | 600            | 200                  | 58                            | 65                                        | 1.6            | 1 t                               | L                     | 3                   | 1039                                           | 16.62                             | 13.0        | 13.2 | 13.4 |  |
| ALI 08      | A                         | 75            | —     | 600            | 200                  | 58                            | 73                                        | 0.8            | 1 t                               | L                     | 3                   | 1048                                           | 8.383                             | 6.58        | 6.77 | 6.98 |  |
| ALI 10      | A                         | 75            | —     | 600            | 200                  | 58                            | 73                                        | 1.0            | 1 t                               | L                     | 3                   | 1046                                           | 10.45                             | 8.21        | 8.40 | 8.61 |  |
| ALI 12      | A                         | 75            | —     | 600            | 200                  | 58                            | 73                                        | 1.2            | 1 t                               | L                     | 3                   | 1043                                           | 12.52                             | 9.83        | 10.0 | 10.2 |  |
| ALI 16      | A                         | 75            | —     | 600            | 200                  | 58                            | 73                                        | 1.6            | 1 t                               | L                     | 3                   | 1039                                           | 16.60                             | 13.0        | 13.2 | 13.4 |  |
| ALJ 08      | A                         | 75            | —     | 600            | 200                  | 58                            | 80                                        | 0.8            | 1 t                               | L                     | 3                   | 1016                                           | 8.128                             | 6.38        | 6.57 | 6.77 |  |
| ALJ 10      | A                         | 75            | —     | 600            | 200                  | 58                            | 80                                        | 1.0            | 1 t                               | L                     | 3                   | 1012                                           | 10.12                             | 7.94        | 8.13 | 8.33 |  |

Attached Table 1 (Continued)

| Designation | Symbol of sectional shape | Dimensions mm |       |                |                      |                               |                                           |                |                                   |                       | Symbol of end shape | Calculating formula for developed width<br>No. | Per one sheet                     |             |      |      |  |
|-------------|---------------------------|---------------|-------|----------------|----------------------|-------------------------------|-------------------------------------------|----------------|-----------------------------------|-----------------------|---------------------|------------------------------------------------|-----------------------------------|-------------|------|------|--|
|             |                           | Height<br>H   | Width |                | Pitch of groove<br>B | Dimension of groove base<br>b | Dimension of groove top<br>b <sub>1</sub> | Thickness<br>t | Inside radius of corner part<br>r | Developed width<br>mm |                     |                                                | Sectional area<br>cm <sup>2</sup> | Weight kg/m |      |      |  |
|             |                           |               | W     | W <sub>0</sub> |                      |                               |                                           |                |                                   |                       |                     |                                                |                                   | As rolled   | Z 12 | Z 27 |  |
| ALJ 12      | A                         | 75            | —     | 600            | 200                  | 58                            | 80                                        | 1.2            | 1 t                               | L                     | 3                   | 1 009                                          | 12.11                             | 9.51        | 9.69 | 9.89 |  |
| ALJ 16      | A                         | 75            | —     | 600            | 200                  | 58                            | 80                                        | 1.6            | 1 t                               | L                     | 3                   | 1 003                                          | 16.05                             | 12.6        | 12.8 | 13.0 |  |
| ALJ 23      | A                         | 75            | —     | 600            | 200                  | 58                            | 80                                        | 2.3            | 1 t                               | L                     | 3                   | 991.8                                          | 22.81                             | 17.9        | 18.1 | 18.3 |  |
| ALK 12      | A                         | 75            | —     | 600            | 200                  | 58                            | 88                                        | 1.2            | 1 t                               | L                     | 3                   | 995.8                                          | 11.95                             | 9.38        | 9.56 | 9.76 |  |
| ALK 16      | A                         | 75            | —     | 600            | 200                  | 58                            | 88                                        | 1.6            | 1 t                               | L                     | 3                   | 989.8                                          | 15.84                             | 12.4        | 12.6 | 12.8 |  |
| ALK 23      | A                         | 75            | —     | 600            | 200                  | 58                            | 88                                        | 2.3            | 1 t                               | L                     | 3                   | 979.5                                          | 22.53                             | 17.7        | 17.9 | 18.1 |  |
| ALL 12      | A                         | 75            | —     | 690            | 230                  | 88                            | 95                                        | 1.2            | 1 t                               | L                     | 3                   | 1 141                                          | 13.69                             | 10.7        | 11.0 | 11.2 |  |
| ALL 16      | A                         | 75            | —     | 690            | 230                  | 88                            | 95                                        | 1.6            | 1 t                               | L                     | 3                   | 1 134                                          | 18.14                             | 14.2        | 14.4 | 14.7 |  |
| ALM 08      | A                         | 75            | —     | 690            | 230                  | 88                            | 110                                       | 0.8            | 1 t                               | L                     | 3                   | 1 116                                          | 8.928                             | 7.01        | 7.21 | 7.43 |  |
| ALM 10      | A                         | 75            | —     | 690            | 230                  | 88                            | 110                                       | 1.0            | 1 t                               | L                     | 3                   | 1 112                                          | 11.12                             | 8.73        | 8.93 | 9.15 |  |
| ALM 12      | A                         | 75            | —     | 690            | 230                  | 88                            | 110                                       | 1.2            | 1 t                               | L                     | 3                   | 1 109                                          | 13.31                             | 10.4        | 10.6 | 10.9 |  |
| ALM 16      | A                         | 75            | —     | 690            | 230                  | 88                            | 110                                       | 1.6            | 1 t                               | L                     | 3                   | 1 103                                          | 17.65                             | 13.9        | 14.1 | 14.3 |  |
| ALM 23      | A                         | 75            | —     | 690            | 230                  | 88                            | 110                                       | 2.3            | 1 t                               | L                     | 3                   | 1 091                                          | 25.09                             | 19.7        | 19.9 | 20.1 |  |
| ALN 10      | A                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 1.0            | 1 t                               | L                     | 3                   | 1 089                                          | 10.89                             | 8.55        | 8.75 | 8.96 |  |
| ALN 12      | A                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 1.2            | 1 t                               | L                     | 3                   | 1 086                                          | 13.03                             | 10.2        | 10.4 | 10.6 |  |
| ALN 16      | A                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 1.6            | 1 t                               | L                     | 3                   | 1 080                                          | 17.28                             | 13.6        | 13.8 | 14.0 |  |
| ALN 23      | A                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 2.3            | 1 t                               | L                     | 3                   | 1 069                                          | 24.60                             | 19.3        | 19.5 | 19.7 |  |
| ALO 12      | A                         | 80            | —     | 600            | 200                  | 40                            | 72                                        | 1.2            | 1 t                               | L                     | 2                   | 1 015                                          | 12.19                             | 9.56        | 9.75 | 9.95 |  |
| ALO 16      | A                         | 80            | —     | 600            | 200                  | 40                            | 72                                        | 1.6            | 1 t                               | L                     | 2                   | 1 009                                          | 16.15                             | 12.7        | 12.9 | 13.1 |  |
| ALP 12      | A                         | 80            | —     | 690            | 230                  | 70                            | 102                                       | 1.2            | 1 t                               | L                     | 2                   | 1 116                                          | 13.39                             | 10.5        | 10.7 | 10.9 |  |
| ALP 16      | A                         | 80            | —     | 690            | 230                  | 70                            | 102                                       | 1.6            | 1 t                               | L                     | 2                   | 1 110                                          | 17.75                             | 13.9        | 14.1 | 14.4 |  |
| AMA 23      | A                         | 100           | 500   | —              | 250                  | 95                            | 155                                       | 2.3            | 7.7                               | M                     | 4                   | 852.8                                          | 19.60                             | 15.4        | 15.5 | 15.7 |  |
| AMA 27      | A                         | 100           | 500   | —              | 250                  | 95                            | 155                                       | 2.7            | 7.3                               | M                     | 4                   | 849.6                                          | 22.94                             | 18.0        | 18.2 | 18.3 |  |

Attached Table 1 (Continued)

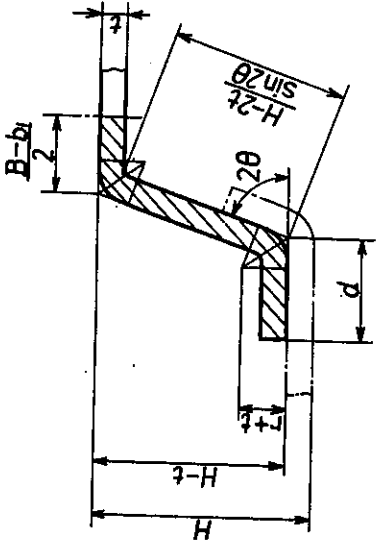
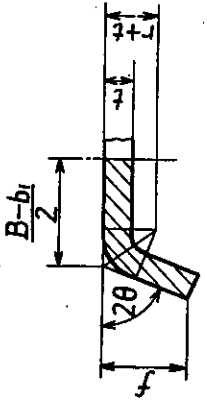
| Designation | Symbol of sectional shape | Dimensions mm |       |                |                   |                            |                                        |             |                                | Symbol of end shape | Calculating formula for developed width No. | Per one sheet      |                                |             |      |      |
|-------------|---------------------------|---------------|-------|----------------|-------------------|----------------------------|----------------------------------------|-------------|--------------------------------|---------------------|---------------------------------------------|--------------------|--------------------------------|-------------|------|------|
|             |                           | Height H      | Width |                | Pitch of groove B | Dimension of groove base b | Dimension of groove top b <sub>1</sub> | Thickness t | Inside radius of corner part r |                     |                                             | Developed width mm | Sectional area cm <sup>2</sup> | Weight kg/m |      |      |
|             |                           |               | W     | W <sub>0</sub> |                   |                            |                                        |             |                                |                     |                                             |                    |                                | As rolled   | Z 12 | Z 27 |
| AMA 32      | A                         | 100           | 500   | —              | 250               | 95                         | 155                                    | 3.2         | 6.8                            | M                   | 4                                           | 845.7              | 27.06                          | 21.2        | 21.4 | 21.5 |
| AMA 40      | A                         | 100           | 500   | —              | 250               | 95                         | 155                                    | 4.0         | 6.0                            | M                   | 4                                           | 839.0              | 33.57                          | 26.3        | 26.5 | 26.6 |
| AMA 45      | A                         | 100           | 500   | —              | 250               | 95                         | 155                                    | 4.5         | 5.5                            | M                   | 4                                           | 835.4              | 37.59                          | 29.5        | 29.7 | 29.8 |
| AMA 60      | A                         | 100           | 500   | —              | 250               | 95                         | 155                                    | 6.0         | 4.0                            | M                   | 4                                           | 823.9              | 49.43                          | 38.8        | 39.0 | 39.1 |
| ANA 12      | A                         | 25            | —     | 360            | 90                | 40                         | 50                                     | 1.2         | 1 t                            | N                   | 5                                           | 521.6              | 6.259                          | 4.91        | 5.00 | 5.11 |
| ANA 16      | A                         | 25            | —     | 360            | 90                | 40                         | 50                                     | 1.6         | 1 t                            | N                   | 5                                           | 517.8              | 8.285                          | 6.50        | 6.59 | 6.70 |
| ANB 16      | A                         | 40            | —     | 600            | 150               | 15                         | 18                                     | 1.6         | 1 t                            | N                   | 5                                           | 885.3              | 14.17                          | 11.1        | 11.3 | 11.5 |
| ANB 23      | A                         | 40            | —     | 600            | 150               | 15                         | 18                                     | 2.3         | 1 t                            | N                   | 5                                           | 870.9              | 20.03                          | 15.7        | 15.9 | 16.1 |
| APA 16      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 1.6         | 10                             | P                   | 6                                           | 837.6              | 13.40                          | 10.5        | 10.7 | 10.8 |
| APA 23      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 2.3         | 10                             | P                   | 6                                           | 832.5              | 19.15                          | 15.0        | 15.2 | 15.4 |
| APA 27      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 2.7         | 10                             | P                   | 6                                           | 829.6              | 22.40                          | 17.6        | 17.7 | 17.9 |
| APA 32      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 3.2         | 10                             | P                   | 6                                           | 826.0              | 26.43                          | 20.7        | 20.9 | 21.1 |
| APA 40      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 4.0         | 10                             | P                   | 6                                           | 820.3              | 32.81                          | 25.8        | —    | —    |
| APA 45      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 4.5         | 10                             | P                   | 6                                           | 816.8              | 36.75                          | 28.8        | —    | —    |
| APA 60      | A                         | 100           | 570   | —              | 250               | 95                         | 155                                    | 6.0         | 10                             | P                   | 6                                           | 806.3              | 48.38                          | 38.0        | —    | —    |
| AQA 12      | A                         | 50            | —     | 270            | 180               | 80                         | 100                                    | 1.2         | 1 t                            | Q                   | 7                                           | 407.6              | 4.891                          | 3.84        | 3.91 | 3.99 |
| AQA 16      | A                         | 50            | —     | 270            | 180               | 80                         | 100                                    | 1.6         | 1 t                            | Q                   | 7                                           | 402.8              | 6.445                          | 5.06        | 5.13 | 5.21 |
| AQB 16      | A                         | 121.6         | —     | 300            | 150               | 52                         | 90                                     | 1.6         | 1 t                            | Q                   | 7                                           | 758.0              | 12.13                          | 9.52        | 9.66 | 9.81 |
| AQB 23      | A                         | 122.3         | —     | 300            | 150               | 52                         | 90                                     | 2.3         | 1 t                            | Q                   | 7                                           | 749.9              | 17.25                          | 13.5        | 13.7 | 13.8 |
| AQB 32      | A                         | 123.2         | —     | 300            | 150               | 52                         | 90                                     | 3.2         | 1 t                            | Q                   | 7                                           | 739.5              | 23.66                          | 18.6        | 18.7 | 18.9 |

Attached Table 1 (Continued)

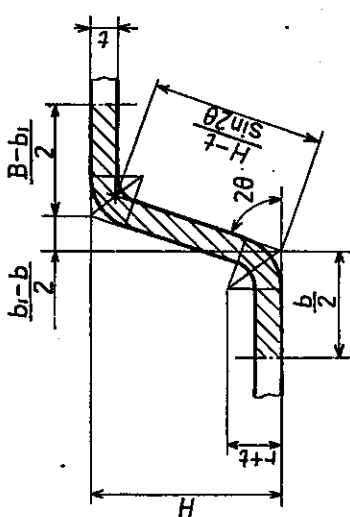
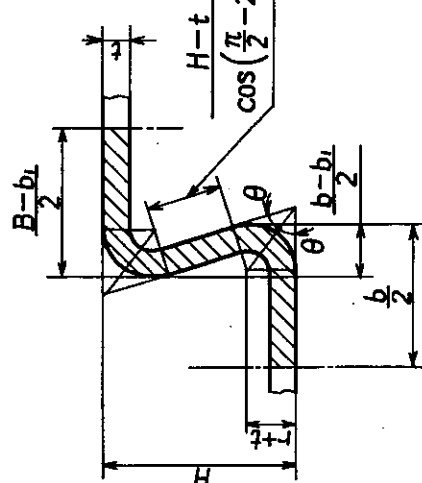
| Designation | Symbol of sectional shape | Dimensions mm |       |                |                      |                               |                                           |                |                                   | Symbol of end shape | Calculating formula for developed width<br>No. | Per one sheet         |                                   |             |      |      |
|-------------|---------------------------|---------------|-------|----------------|----------------------|-------------------------------|-------------------------------------------|----------------|-----------------------------------|---------------------|------------------------------------------------|-----------------------|-----------------------------------|-------------|------|------|
|             |                           | Height<br>H   | Width |                | Pitch of groove<br>B | Dimension of groove base<br>b | Dimension of groove top<br>b <sub>1</sub> | Thickness<br>t | Inside radius of corner part<br>r |                     |                                                | Developed width<br>mm | Sectional area<br>cm <sup>2</sup> | Weight kg/m |      |      |
|             |                           |               | W     | W <sub>0</sub> |                      |                               |                                           |                |                                   |                     |                                                |                       |                                   | As rolled   | Z 12 | Z 27 |
| ARA 12      | A                         | 50            | —     | 614            | 205                  | 40                            | 60                                        | 1.2            | 1 t                               | R                   | 8                                              | 872.9                 | 10.47                             | 8.22        | 8.38 | 8.56 |
| ARA 16      | A                         | 50            | —     | 614            | 205                  | 40                            | 60                                        | 1.6            | 1 t                               | R                   | 8                                              | 867.0                 | 13.87                             | 10.9        | 11.0 | 11.2 |
| BLA 12      | B                         | 50            | —     | 614            | 204.7                | 50                            | 70                                        | 1.2            | 1 t                               | L                   | 9                                              | 924.9                 | 11.10                             | 8.71        | 8.88 | 9.06 |
| BLA 15      | B                         | 50            | —     | 614            | 204.7                | 50                            | 70                                        | 1.5            | 1 t                               | L                   | 9                                              | 918.9                 | 13.78                             | 10.8        | 11.0 | 11.2 |
| BLB 08      | B                         | 75            | —     | 690            | 230                  | 88                            | 103                                       | 0.8            | 1 t                               | L                   | 9                                              | 1141                  | 9.126                             | 7.16        | 7.37 | 7.59 |
| BLB 10      | B                         | 75            | —     | 690            | 230                  | 88                            | 103                                       | 1.0            | 1 t                               | L                   | 9                                              | 1137                  | 11.37                             | 8.93        | 9.14 | 9.36 |
| BLB 12      | B                         | 75            | —     | 690            | 230                  | 88                            | 103                                       | 1.2            | 1 t                               | L                   | 9                                              | 1134                  | 13.61                             | 10.7        | 10.9 | 11.1 |
| BLB 16      | B                         | 75            | —     | 690            | 230                  | 88                            | 103                                       | 1.6            | 1 t                               | L                   | 9                                              | 1128                  | 18.04                             | 14.2        | 14.4 | 14.6 |
| BLC 12      | B                         | 75            | —     | 600            | 200                  | 58                            | 88                                        | 1.2            | 1 t                               | L                   | 9                                              | 998.8                 | 11.99                             | 9.41        | 9.59 | 9.79 |
| BLC 16      | B                         | 75            | —     | 600            | 200                  | 58                            | 88                                        | 1.6            | 1 t                               | L                   | 9                                              | 992.9                 | 15.89                             | 12.5        | 12.6 | 12.8 |
| BLC 23      | B                         | 75            | —     | 600            | 200                  | 58                            | 88                                        | 2.3            | 1 t                               | L                   | 9                                              | 982.4                 | 22.60                             | 17.7        | 17.9 | 18.1 |
| BLD 10      | B                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 1.0            | 1 t                               | L                   | 9                                              | 1092                  | 10.92                             | 8.57        | 8.77 | 8.99 |
| BLD 12      | B                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 1.2            | 1 t                               | L                   | 9                                              | 1089                  | 13.07                             | 10.3        | 10.5 | 10.7 |
| BLD 16      | B                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 1.6            | 1 t                               | L                   | 9                                              | 1083                  | 17.33                             | 13.6        | 13.8 | 14.0 |
| BLD 23      | B                         | 75            | —     | 690            | 230                  | 88                            | 118                                       | 2.3            | 1 t                               | L                   | 9                                              | 1072                  | 24.67                             | 19.4        | 19.6 | 19.8 |
| DKA 12      | D                         | 13            | 430   | —              | 83                   | 45                            | 38                                        | 1.2            | 1 t                               | K                   | 10                                             | 558.8                 | 6.706                             | 5.26        | 5.37 | 5.48 |

Attached Table 2. Calculating Formulas for Developed  
Width of Deck Plates

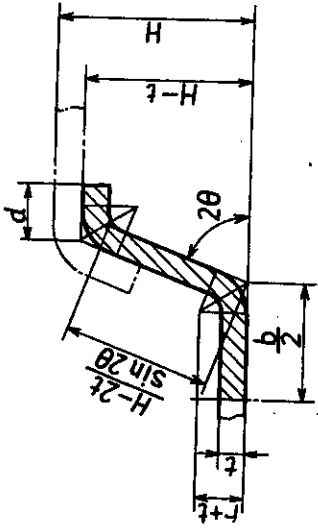
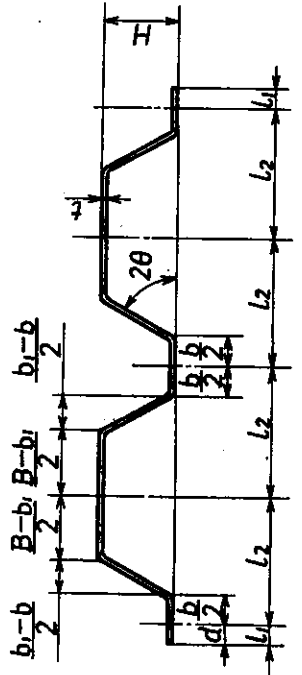
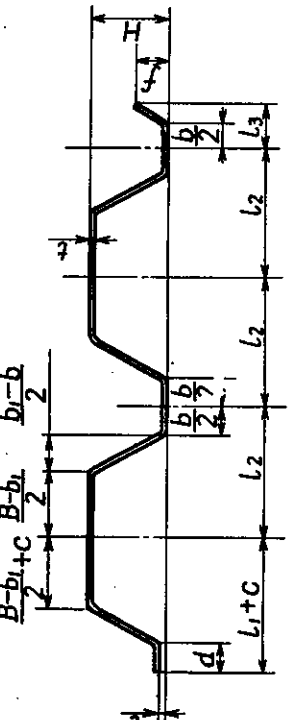
Dimension in mm.  
Angle in radian.  
 $n$ : No. of intermediate  
parts ( $l_1, l_1'$ )

| Form                                                                                        | Sectional shape                                                                       | Calculating formula for developed width                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Fundamental formula</p> <p><math>l_1</math></p> <p>(Developed width for type L end)</p>  |    | $l_1 = \left\{ d - (r+t) \times \tan \theta \right\} + 2\pi \times (r+0.5t) \times \frac{2\theta}{2\pi} + \left\{ \frac{H-2t}{\sin 2\theta} - (r+t) \tan \theta - r \times \tan \theta \right\}$ $+ 2\pi \times (r+0.5t) \times \frac{2\theta}{2\pi} + \left\{ \frac{B-b_1}{2} - (r+t) \tan \theta \right\}$ $= \frac{1}{2} (B-b_1) + d + \frac{H-2t}{\sin 2\theta} + 4(r+0.5t)\theta - (4r+3t) \tan \theta$ |
| <p>Fundamental formula</p> <p><math>l_1'</math></p> <p>(Developed width for type R end)</p> |  | $l_1' = \left\{ \frac{f}{\sin 2\theta} - (r+t) \tan \theta \right\} + \left\{ \frac{B-b_1}{2} - (r+t) \tan \theta \right\} + (r+0.5t) \times 2\theta$ $= \frac{1}{2} (B-b_1) + \frac{f}{\sin 2\theta} + 2(r+0.5t)\theta - 2(r+t) \tan \theta$                                                                                                                                                                |

Attached Table 2 (Continued)

| Form                                                                                                      | Sectional shape                                                                                                                                                                                                                                                                                                                                          | Calculating formula for developed width                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Fundamental formula</p> <p><math>l_2</math></p> <p>(Developed width for type A intermediate part)</p>  |  $2\theta = \frac{\pi}{2} - (\alpha + \beta)$ $\alpha = \tan^{-1} \frac{b_1 - b}{2H}$ $= \tan^{-1} \frac{b_1 - b}{2H}$ $\beta = \sin^{-1} \frac{t}{\sqrt{H^2 + \left(\frac{b_1 - b}{2}\right)^2}}$                                                                    | $l_2 = \left\{ \frac{b}{2} - (r+t) \tan \theta \right\} + 2\pi \times (r+0.5t) \times \frac{2\theta}{2\pi} + \left\{ \frac{H-t}{\sin 2\theta} - (r+t) \tan \theta - r \tan \theta \right\}$ $+ 2\pi \times (r+0.5t) \times \frac{2\theta}{2\pi} + \left\{ \frac{B-b_1}{2} - (r+t) \tan \theta \right\}$ $= \frac{1}{2} (B-b_1+b) + \frac{H-t}{\sin 2\theta} + 4(r+0.5t)\theta - (4r+3t) \tan \theta$                                      |
| <p>Fundamental formula</p> <p><math>l_2'</math></p> <p>(Developed width for type D intermediate part)</p> |  $\tan 2\theta = \frac{(H-t) \tan \theta}{(2r+t) + \left\{ \frac{b-b_1}{2} - 2(r+t) \right\} \tan \theta}$ $\therefore \theta = \tan^{-1} \frac{\left\{ 2(r+t) - \frac{b-b_1}{2} \right\} + \sqrt{\left( \frac{b-b_1}{2} - 2(r+t) \right)^2 - (H-t)(4r+3t-H)}}{H-t}$ | $l_2' = \left\{ \frac{b}{2} - (r+t) \right\} + 2\pi \times (r+0.5t) + \frac{\pi - 2\theta}{2\pi} + \left\{ \frac{H-t}{\cos(\frac{\pi}{2} - 2\theta)} - (2r+t) \tan(\frac{\pi}{2} - \theta) \right\}$ $+ 2\pi \times (r+0.5t) \times \frac{\pi - 2\theta}{2\pi} + \left\{ \frac{B-b_1}{2} - (r+t) \right\}$ $= \frac{1}{2} (B-b_1+b) - 2(r+t) + \frac{H-t}{\sin 2\theta} - (2r+t) \tan(\frac{\pi}{2} - \theta) + 2(r+0.5t)(\pi - 2\theta)$ |

Attached Table 2 (Continued)

| Form                                                                                                      | Sectional shape                                                                       | Calculating formula for developed width                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Fundamental formula</p> <p><math>l_s'</math></p> <p>(Developed width for type R intermediate part)</p> |    | $l_s' = \left\{ \frac{b}{2} - (r+t) \tan \theta \right\} + \left\{ \frac{H-2t}{\sin 2\theta} - (r+t) \tan \theta \right\} + \left\{ d - (r+t) \tan \theta - r \tan \theta \right\}$ $+ 2 \times 2\pi \times (r+0.5t) \times \frac{2\theta}{2\pi}$ $= \frac{b}{2} + d + \frac{H-2t}{\sin 2\theta} + 4(r+0.5t)\theta - (4r+3t) \tan \theta$ |
| <p>Form</p> <p>Symbol of section</p> <p>A</p> <p>K</p> <p>1</p>                                           |   | $l = 2l_1 + n l_2$ $= 2d + n \left\{ \frac{1}{2}(B-b_1+b) + \frac{H-t}{\sin 2\theta} + 4(r+0.5t)\theta - (4r+3t) \tan \theta \right\}$                                                                                                                                                                                                    |
| <p>A</p> <p>L</p> <p>2</p>                                                                                |  | $l = l_1 + n l_2 + l_3 + c$ $= \frac{1}{2}(n+1)(B-b_1+b) + d + \frac{f+(n+1)(H-t)}{\sin 2\theta} + (4n+6)(r+0.5t)\theta$ $- (n(4r+3t) + 6r + 5t) \tan \theta$                                                                                                                                                                             |

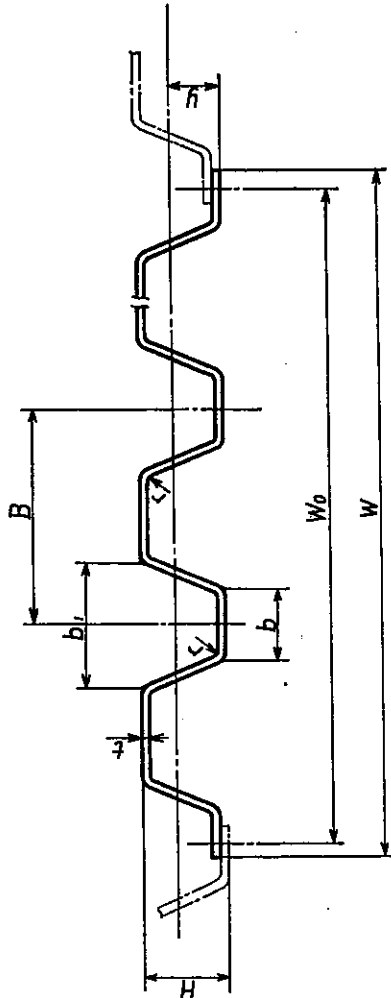
**Attached Table 2 (Continued)**

| Form              |               | Sectional shape | Calculating formula for developed width                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Symbol of section | Symbol of end |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| A                 | L             |                 | $l = l_1 + nl_2 + l_3 + c$<br>$= \frac{1}{2}(n+1)(B - b_1 + b) + d + \frac{f + (n+1)(H-t)}{\sin 2\theta} + (4n+6)(r+0.5t)\theta$<br>$- \{ n(4r+3t) + 6r + 5t \} \tan \theta$<br>$l = 2l_1 + nl_2$<br>$= (n+2) \left\{ \frac{1}{2}(B - b_1 + b) + \frac{H-t}{\sin 2\theta} + 4(r+0.5t)\theta - (4r+3t)\tan \theta \right\}$<br>$+ 2f + n(R+0.5t) - 4(R+t)$<br>$l = l_1 + nl_2 + l_3 + c$<br>$= \frac{1}{2}(n+1)(B - b_1 + b) + \frac{n(H-t) + f_1 + f_2 + t}{\sin 2\theta} + 4(n+1)(r+0.5t)\theta$<br>$- \{ n(4r+3t) + 4(r+t) \} \tan \theta$<br>$l = l_1 + nl_2 + l_3 \quad (\text{Assuming } l_1 + l_3 = G)$<br>$= G + n \left\{ \frac{1}{2}(B - b_1 + b) + \frac{H-t}{\sin 2\theta} + 4(r+0.5t)\theta - (4r+3t)\tan \theta \right\}$ |
| A                 | M             |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| A                 | N             |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| A                 | P             |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Attached Table 2 (Continued)**

[illegible]

Reference: Sectional area, weight and  
sectional performance per unit  
width (B) of deck plates



| Designation | Symbol of sectional shape | Dimensions mm |                     |    |    |                |     | Symbol of end shape   | Effective width | Sectional area<br>A cm <sup>2</sup><br>(per unit width) | Weight as rolled<br>W kg/m<br>(per unit width) | Position of centre of gravity<br>y cm | Geometrical moment of inertia<br>I cm <sup>4</sup> |           | Section modulus<br>Z cm <sup>3</sup> |           |
|-------------|---------------------------|---------------|---------------------|----|----|----------------|-----|-----------------------|-----------------|---------------------------------------------------------|------------------------------------------------|---------------------------------------|----------------------------------------------------|-----------|--------------------------------------|-----------|
|             |                           | H             | W or W <sub>0</sub> | B  | b  | b <sub>1</sub> | t   | Radius of corner<br>r |                 |                                                         |                                                |                                       | Unit width                                         | 1 m width | Unit width                           | 1 m width |
| AKA 12      | A                         | 13            | 1055                | 71 | 33 | 46             | 1.2 | 8.8                   | *               | 0.9661                                                  | 0.758                                          | 0.591                                 | 0.243                                              | 3.42      | 0.342                                | 4.82      |
| AKA 16      | A                         | 13            | 1055                | 71 | 33 | 46             | 1.6 | 8.4                   | *               | 1.281                                                   | 1.01                                           | 0.593                                 | 0.304                                              | 4.28      | 0.430                                | 6.05      |
| AKB 08      | A                         | 15            | 1032                | 78 | 25 | 38             | 0.8 | 9.2                   | *               | 0.7250                                                  | 0.569                                          | 0.868                                 | 0.256                                              | 3.28      | 0.295                                | 3.78      |
| AKB 12      | A                         | 15            | 1032                | 78 | 25 | 38             | 1.2 | 8.8                   | *               | 1.081                                                   | 0.849                                          | 0.865                                 | 0.363                                              | 4.66      | 0.420                                | 5.38      |
| AKB 14      | A                         | 15            | 1032                | 78 | 25 | 38             | 1.4 | 8.6                   | *               | 1.258                                                   | 0.988                                          | 0.864                                 | 0.412                                              | 5.29      | 0.478                                | 6.12      |
| AKC 08      | A                         | 25            | 830                 | 90 | 40 | 50             | 0.8 | 1 t                   | *               | 1.018                                                   | 0.799                                          | 1.25                                  | 1.10                                               | 12.2      | 0.882                                | 9.80      |
| AKC 12      | A                         | 25            | 830                 | 90 | 40 | 50             | 1.2 | 1 t                   | *               | 1.506                                                   | 1.18                                           | 1.25                                  | 1.58                                               | 17.5      | 1.26                                 | 14.0      |
| AKD 08      | A                         | 25            | 650                 | 90 | 40 | 50             | 0.8 | 1 t                   | *               | 1.018                                                   | 0.799                                          | 1.25                                  | 1.10                                               | 12.2      | 0.882                                | 9.80      |

Note: \* : Total sec. \*\* : Both ends

| Designation | Symbol of sectional shape | Dimensions mm |                     |       |      |                |     |                              |            |           |            | Symbol of end shape | Effective width | Sectional area<br>A cm <sup>2</sup><br>(Per unit width) | Weight as rolled<br>W kg/m<br>(Per unit width) | Position of centre of gravity<br>y cm | Geometrical moment of inertia<br>I cm <sup>4</sup> |      | Section modulus<br>Z cm <sup>3</sup> |  |
|-------------|---------------------------|---------------|---------------------|-------|------|----------------|-----|------------------------------|------------|-----------|------------|---------------------|-----------------|---------------------------------------------------------|------------------------------------------------|---------------------------------------|----------------------------------------------------|------|--------------------------------------|--|
|             |                           | H             | W or W <sub>0</sub> | B     | b    | b <sub>1</sub> | t   | Inside of corner<br>radius r | Unit width | 1 m width | Unit width |                     |                 |                                                         |                                                |                                       | 1 m width                                          |      |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            |           |            |                     |                 |                                                         |                                                |                                       |                                                    |      |                                      |  |
| AKD 10      | A                         | 25            | 650                 | 90    | 40   | 50             | 1.0 | 1 t                          | K          | *         | 50 t       | 1.264               | 0.992           | 1.25                                                    | 1.35                                           | 15.0                                  | 1.08                                               | 12.0 |                                      |  |
| AKD 12      | A                         | 25            | 650                 | 90    | 40   | 50             | 1.2 | 1 t                          | K          | *         | 50 t       | 1.506               | 1.18            | 1.25                                                    | 1.58                                           | 17.5                                  | 1.26                                               | 14.0 |                                      |  |
| ALA 16      | A                         | 50            | 800                 | 200   | 60   | 74             | 1.6 | 1 t                          | L          | *         | 50 t       | 4.461               | 3.50            | 3.07                                                    | 18.5                                           | 92.6                                  | 6.03                                               | 30.1 |                                      |  |
| ALB 12      | A                         | 50            | 614                 | 204.7 | 38.6 | 58.6           | 1.2 | 1 t                          | L          | *         | 50 t       | 3.811               | 2.65            | 2.76                                                    | 15.9                                           | 79.6                                  | 5.78                                               | 28.9 |                                      |  |
| ALB 16      | A                         | 50            | 614                 | 204.7 | 38.6 | 58.6           | 1.6 | 1 t                          | L          | *         | 50 t       | 3.372               | 2.65            | 3.43                                                    | 12.4                                           | 60.5                                  | 3.60                                               | 17.6 |                                      |  |
| ALC 12      | A                         | 50            | 614                 | 205   | 40   | 60             | 1.2 | 1 t                          | L          | *         | 50 t       | 2.385               | 3.51            | 2.81                                                    | 9.21                                           | 45.0                                  | 3.28                                               | 16.0 |                                      |  |
| ALC 16      | A                         | 50            | 614                 | 205   | 40   | 60             | 1.6 | 1 t                          | L          | *         | 50 t       | 4.467               | 2.65            | 3.02                                                    | 13.3                                           | 65.0                                  | 4.41                                               | 21.6 |                                      |  |
| ALD 12      | A                         | 50            | 614                 | 205   | 50   | 70             | 1.2 | 1 t                          | L          | *         | 50 t       | 3.491               | 3.51            | 3.41                                                    | 12.5                                           | 61.1                                  | 3.67                                               | 17.9 |                                      |  |
| ALD 16      | A                         | 50            | 614                 | 205   | 50   | 70             | 1.6 | 1 t                          | L          | *         | 50 t       | 3.376               | 2.65            | 2.79                                                    | 9.33                                           | 45.5                                  | 3.34                                               | 16.3 |                                      |  |
| ALE 12      | A                         | 50            | 614                 | 205   | 92.5 | 112.5          | 1.2 | 1 t                          | L          | *         | 50 t       | 4.472               | 3.51            | 3.41                                                    | 16.3                                           | 79.4                                  | 4.78                                               | 23.3 |                                      |  |
| ALE 16      | A                         | 50            | 614                 | 205   | 92.5 | 112.5          | 1.6 | 1 t                          | L          | *         | 50 t       | 3.513               | 2.65            | 3.00                                                    | 13.5                                           | 65.8                                  | 4.50                                               | 22.0 |                                      |  |
| ALF 12      | A                         | 50            | 614                 | 204.7 | 90   | 110            | 1.2 | 1 t                          | L          | *         | 50 t       | 2.522               | 3.51            | 2.66                                                    | 10.2                                           | 49.7                                  | 3.83                                               | 18.7 |                                      |  |
| ALF 16      | A                         | 50            | 614                 | 204.7 | 90   | 110            | 1.6 | 1 t                          | L          | *         | 50 t       | 4.472               | 2.65            | 3.24                                                    | 17.6                                           | 85.7                                  | 5.43                                               | 26.5 |                                      |  |
| ALG 12      | A                         | 60            | 600                 | 200   | 80   | 100            | 1.2 | 1 t                          | L          | *         | 50 t       | 3.673               | 2.65            | 2.87                                                    | 14.8                                           | 72.2                                  | 5.16                                               | 25.2 |                                      |  |
| ALG 16      | A                         | 60            | 600                 | 200   | 80   | 100            | 1.6 | 1 t                          | L          | *         | 50 t       | 3.376               | 2.65            | 2.50                                                    | 15.3                                           | 74.8                                  | 6.13                                               | 29.9 |                                      |  |
| ALH 12      | A                         | 75            | 600                 | 200   | 58   | 65             | 1.2 | 1 t                          | L          | *         | 50 t       | 3.032               | 3.51            | 2.22                                                    | 13.1                                           | 63.7                                  | 4.70                                               | 22.9 |                                      |  |
| ALH 16      | A                         | 75            | 600                 | 200   | 58   | 65             | 1.6 | 1 t                          | L          | *         | 50 t       | 4.472               | 2.65            | 2.50                                                    | 20.0                                           | 97.5                                  | 7.99                                               | 39.0 |                                      |  |
| ALI 08      | A                         | 75            | 600                 | 200   | 58   | 73             | 0.8 | 1 t                          | L          | *         | 50 t       | 4.353               | 2.65            | 2.43                                                    | 19.3                                           | 94.0                                  | 7.51                                               | 36.6 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 3.372               | 2.65            | 2.54                                                    | 15.3                                           | 74.8                                  | 6.02                                               | 29.4 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 3.002               | 3.51            | 2.24                                                    | 12.9                                           | 63.1                                  | 4.69                                               | 22.9 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 4.467               | 2.65            | 2.54                                                    | 19.9                                           | 97.5                                  | 7.85                                               | 38.4 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 4.313               | 2.65            | 2.46                                                    | 19.0                                           | 93.0                                  | 7.49                                               | 36.6 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 3.548               | 2.79            | 3.20                                                    | 22.3                                           | 111                                   | 6.96                                               | 34.8 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 3.116               | 3.69            | 2.82                                                    | 18.6                                           | 92.8                                  | 5.83                                               | 29.2 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 4.700               | 3.69            | 3.20                                                    | 29.1                                           | 145                                   | 9.09                                               | 45.4 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 4.464               | 3.69            | 3.06                                                    | 27.2                                           | 136                                   | 8.91                                               | 44.6 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 4.032               | 3.17            | 4.60                                                    | 35.9                                           | 180                                   | 7.81                                               | 39.1 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 3.186               | 4.19            | 3.84                                                    | 27.2                                           | 136                                   | 7.09                                               | 35.5 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 5.338               | 2.08            | 4.60                                                    | 46.9                                           | 235                                   | 10.2                                               | 51.0 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 4.554               | 2.08            | 4.11                                                    | 39.6                                           | 198                                   | 9.63                                               | 48.2 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 2.650               | 2.08            | 4.52                                                    | 23.9                                           | 120                                   | 5.29                                               | 26.5 |                                      |  |
|             |                           |               |                     |       |      |                |     |                              |            | *         | 50 t       | 1.977               | 2.08            | 3.52                                                    | 16.2                                           | 80.8                                  | 4.06                                               | 20.3 |                                      |  |

Note: \*: Total sec. \*\*: Both ends

| Design-<br>nation | Symbol<br>of sec-<br>tional<br>shape | Dimensions mm |                    |     |     |       |     | Symbol<br>of end<br>shape  | Effective<br>width | Sectional<br>area<br>$A \text{ cm}^2$<br>(Per unit<br>width) | Weight<br>as rolled<br>$W \text{ kg/m}$<br>(per unit<br>width) | Position of<br>centre of<br>gravity<br>$y \text{ cm}$ | Geometrical moment<br>of inertia<br>$I \text{ cm}^4$ |           | Section modulus<br>$Z \text{ cm}^3$ |           |
|-------------------|--------------------------------------|---------------|--------------------|-----|-----|-------|-----|----------------------------|--------------------|--------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|-----------|-------------------------------------|-----------|
|                   |                                      | $H$           | $W$<br>or<br>$W_0$ | $B$ | $b$ | $b_1$ | $t$ | Radius of<br>corner<br>$r$ |                    |                                                              |                                                                |                                                       | Unit width                                           | 1 m width | Unit width                          | 1 m width |
| ALI 10            | A                                    | 75            | 600                | 200 | 58  | 73    | 1.0 | 1 t                        | *                  | 3.302                                                        | 2.59                                                           | 4.52                                                  | 29.6                                                 | 148       | 6.55                                | 32.8      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 2.568                                                        |                                                                | 3.69                                                  | 21.5                                                 | 108       | 5.65                                | 28.2      |
| ALI 12            | A                                    | 75            | 600                | 200 | 58  | 73    | 1.2 | 1 t                        | *                  | 3.949                                                        | 3.10                                                           | 4.52                                                  | 35.2                                                 | 176       | 7.79                                | 38.9      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 3.197                                                        |                                                                | 3.84                                                  | 27.3                                                 | 137       | 7.12                                | 35.6      |
| ALI 16            | A                                    | 75            | 600                | 200 | 58  | 73    | 1.6 | 1 t                        | *                  | 5.231                                                        | 4.11                                                           | 4.52                                                  | 46.1                                                 | 230       | 10.2                                | 50.9      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 4.570                                                        |                                                                | 4.10                                                  | 39.7                                                 | 199       | 9.68                                | 48.4      |
| ALJ 08            | A                                    | 75            | 600                | 200 | 58  | 73    | 0.8 | 1 t                        | *                  | 2.604                                                        | 2.04                                                           | 4.46                                                  | 23.5                                                 | 118       | 5.27                                | 26.4      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 1.985                                                        |                                                                | 3.98                                                  | 16.2                                                 | 81.0      | 4.07                                | 20.4      |
| ALJ 10            | A                                    | 75            | 600                | 200 | 58  | 80    | 1.0 | 1 t                        | *                  | 3.244                                                        | 2.55                                                           | 4.46                                                  | 29.1                                                 | 146       | 6.53                                | 32.7      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 2.578                                                        |                                                                | 3.82                                                  | 21.6                                                 | 108       | 5.66                                | 28.3      |
| ALJ 12            | A                                    | 75            | 600                | 200 | 58  | 80    | 1.2 | 1 t                        | *                  | 3.881                                                        | 3.05                                                           | 4.46                                                  | 34.6                                                 | 173       | 7.76                                | 38.8      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 3.210                                                        |                                                                | 3.83                                                  | 27.4                                                 | 137       | 7.14                                | 35.7      |
| ALJ 16            | A                                    | 75            | 600                | 200 | 58  | 80    | 1.6 | 1 t                        | *                  | 5.142                                                        | 4.04                                                           | 4.46                                                  | 45.3                                                 | 226       | 10.2                                | 50.8      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 4.589                                                        |                                                                | 4.10                                                  | 39.9                                                 | 199       | 9.72                                | 48.6      |
| ALJ 23            | A                                    | 75            | 600                | 200 | 58  | 80    | 2.3 | 1 t                        | *                  | 7.313                                                        | 5.74                                                           | 4.46                                                  | 63.0                                                 | 315       | 14.1                                | 70.7      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 3.807                                                        |                                                                | 4.38                                                  | 33.9                                                 | 169       | 7.74                                | 38.7      |
| ALK 12            | A                                    | 75            | 600                | 200 | 58  | 88    | 1.2 | 1 t                        | *                  | 3.229                                                        | 2.99                                                           | 3.83                                                  | 27.5                                                 | 137       | 7.18                                | 35.9      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 5.046                                                        |                                                                | 4.38                                                  | 44.4                                                 | 222       | 10.1                                | 50.7      |
| ALK 16            | A                                    | 75            | 600                | 200 | 58  | 88    | 1.6 | 1 t                        | *                  | 4.616                                                        | 3.96                                                           | 4.10                                                  | 40.0                                                 | 200       | 9.77                                | 48.9      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 7.180                                                        |                                                                | 4.38                                                  | 61.8                                                 | 309       | 14.1                                | 70.6      |
| ALK 23            | A                                    | 75            | 600                | 200 | 58  | 88    | 2.3 | 1 t                        | *                  | 4.392                                                        |                                                                | 4.22                                                  | 42.7                                                 | 186       | 10.1                                | 44.0      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 3.546                                                        |                                                                | 3.46                                                  | 31.9                                                 | 139       | 7.88                                | 34.3      |
| ALL 12            | A                                    | 75            | 690                | 230 | 88  | 95    | 1.2 | 1 t                        | *                  | 5.818                                                        |                                                                | 4.22                                                  | 55.9                                                 | 243       | 13.2                                | 57.6      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 5.034                                                        |                                                                | 3.73                                                  | 46.7                                                 | 208       | 12.4                                | 53.8      |
| ALL 16            | A                                    | 75            | 690                | 230 | 88  | 95    | 1.6 | 1 t                        | *                  | 2.844                                                        |                                                                | 4.08                                                  | 27.8                                                 | 121       | 6.81                                | 29.6      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 2.225                                                        |                                                                | 4.35                                                  | 18.8                                                 | 81.7      | 4.32                                | 18.8      |
| ALM 08            | A                                    | 75            | 690                | 230 | 88  | 110   | 0.8 | 1 t                        | *                  | 3.544                                                        |                                                                | 4.08                                                  | 34.4                                                 | 150       | 8.43                                | 36.7      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 2.878                                                        |                                                                | 4.19                                                  | 25.2                                                 | 109       | 6.00                                | 26.1      |
| ALM 10            | A                                    | 75            | 690                | 230 | 88  | 110   | 1.0 | 1 t                        | *                  | 4.241                                                        |                                                                | 4.08                                                  | 41.0                                                 | 178       | 10.0                                | 43.6      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 3.570                                                        |                                                                | 4.05                                                  | 32.0                                                 | 139       | 7.90                                | 34.4      |
| ALM 12            | A                                    | 75            | 690                | 230 | 88  | 110   | 1.2 | 1 t                        | *                  | 5.622                                                        |                                                                | 4.08                                                  | 53.7                                                 | 234       | 13.2                                | 57.2      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               | 5.069                                                        |                                                                | 3.78                                                  | 46.9                                                 | 204       | 12.4                                | 53.9      |
| ALM 16            | A                                    | 75            | 690                | 230 | 88  | 110   | 1.6 | 1 t                        | *                  | 8.003                                                        |                                                                | 4.08                                                  | 74.9                                                 | 326       | 18.3                                | 79.8      |
|                   |                                      |               |                    |     |     |       |     |                            | 50 t               |                                                              |                                                                |                                                       |                                                      |           |                                     |           |
| ALM 23            | A                                    | 75            | 690                | 230 | 88  | 110   | 2.3 | 1 t                        | *                  |                                                              |                                                                |                                                       |                                                      |           |                                     |           |

Note: \*: Total sec. \*\*: Both ends

| Designation | Symbol of sectional shape | Dimensions mm |              |     |     |       |     |                      | Symbol of end shape | Effective width | Sectional area $A$ cm <sup>2</sup><br>(Per unit width) | Weight as rolled $W$ kg/m<br>(per unit width) | Position of centre of gravity $y$ cm | Geometrical moment of inertia $I$ cm <sup>4</sup> |           | Section modulus $Z$ cm <sup>3</sup> |           |
|-------------|---------------------------|---------------|--------------|-----|-----|-------|-----|----------------------|---------------------|-----------------|--------------------------------------------------------|-----------------------------------------------|--------------------------------------|---------------------------------------------------|-----------|-------------------------------------|-----------|
|             |                           | $H$           | $W$ or $W_0$ | $B$ | $b$ | $b_1$ | $t$ | Radius of corner $r$ |                     |                 |                                                        |                                               |                                      | Unit width                                        | 1 m width | Unit width                          | 1 m width |
|             |                           |               |              |     |     |       |     |                      |                     |                 |                                                        |                                               |                                      |                                                   |           |                                     |           |
| ALN 10      | A                         | 75            | 690          | 230 | 88  | 118   | 1.0 | 1 t                  | L                   | *               | 3.432                                                  | 2.73                                          | 4.01                                 | 33.6                                              | 146       | 8.40                                | 36.5      |
| ALN 12      | A                         | 75            | 690          | 230 | 88  | 118   | 1.2 | 1 t                  | L                   | 50 t            | 2.894                                                  | 2.73                                          | 3.31                                 | 25.2                                              | 110       | 6.02                                | 26.2      |
| ALN 16      | A                         | 75            | 690          | 230 | 88  | 118   | 1.6 | 1 t                  | L                   | 50 t            | 3.589                                                  | 3.27                                          | 3.45                                 | 40.0                                              | 174       | 9.99                                | 43.4      |
| ALN 23      | A                         | 75            | 690          | 230 | 88  | 118   | 2.3 | 1 t                  | L                   | 50 t            | 5.526                                                  | 4.34                                          | 4.01                                 | 32.1                                              | 140       | 7.93                                | 34.5      |
| ALO 12      | A                         | 80            | 600          | 200 | 40  | 72    | 1.2 | 1 t                  | L                   | 50 t            | 5.096                                                  | 6.18                                          | 3.72                                 | 52.5                                              | 228       | 13.1                                | 57.0      |
| ALO 16      | A                         | 80            | 600          | 200 | 40  | 72    | 1.6 | 1 t                  | L                   | 50 t            | 7.870                                                  | 6.18                                          | 4.00                                 | 47.0                                              | 204       | 12.4                                | 54.0      |
| ALP 12      | A                         | 80            | 690          | 230 | 70  | 102   | 1.2 | 1 t                  | L                   | 50 t            | 3.905                                                  | 3.07                                          | 5.07                                 | 73.3                                              | 318       | 18.3                                | 79.5      |
| ALP 16      | A                         | 80            | 690          | 230 | 70  | 102   | 1.6 | 1 t                  | L                   | 50 t            | 3.136                                                  | 3.07                                          | 4.36                                 | 36.2                                              | 181       | 7.14                                | 35.7      |
| AMA 23      | A                         | 100           | 500          | 250 | 95  | 155   | 2.3 | 7.7                  | M                   | 50 t            | 5.177                                                  | 4.06                                          | 5.07                                 | 28.2                                              | 141       | 6.48                                | 32.4      |
| AMA 27      | A                         | 100           | 500          | 250 | 95  | 155   | 2.7 | 7.3                  | M                   | 50 t            | 4.491                                                  | 4.06                                          | 4.63                                 | 47.3                                              | 237       | 9.35                                | 46.7      |
| AMA 32      | A                         | 100           | 500          | 250 | 95  | 155   | 3.2 | 6.8                  | M                   | 50 t            | 4.265                                                  | 3.35                                          | 4.64                                 | 40.9                                              | 205       | 8.83                                | 44.2      |
| AMA 40      | A                         | 100           | 500          | 250 | 95  | 155   | 4.0 | 6.0                  | M                   | 50 t            | 3.496                                                  | 3.35                                          | 3.92                                 | 44.4                                              | 193       | 9.57                                | 41.6      |
| AMA 45      | A                         | 100           | 500          | 250 | 95  | 155   | 4.5 | 5.5                  | M                   | 50 t            | 5.657                                                  | 4.44                                          | 4.64                                 | 34.2                                              | 149       | 8.38                                | 36.4      |
| AMA 60      | A                         | 100           | 500          | 250 | 95  | 155   | 6.0 | 4.0                  | M                   | 50 t            | 4.971                                                  | 6.92                                          | 4.19                                 | 58.3                                              | 253       | 12.5                                | 54.6      |
| ANA 12      | A                         | 25            | 360          | 90  | 40  | 50    | 1.2 | 1 t                  | N                   | 50 t            | 8.816                                                  | 8.10                                          | 5.00                                 | 49.9                                              | 217       | 11.9                                | 51.8      |
| ANA 16      | A                         | 25            | 360          | 90  | 40  | 50    | 1.6 | 1 t                  | N                   | 50 t            | —                                                      | —                                             | 5.24                                 | 135                                               | 539       | 26.9                                | 108       |
| ANB 16      | A                         | 40            | 600          | 150 | 15  | 18    | 2.3 | 1 t                  | N                   | 50 t            | —                                                      | —                                             | 5.24                                 | —                                                 | 565       | —                                   | 108       |
| ANB 23      | A                         | 40            | 600          | 150 | 15  | 18    | 2.3 | 1 t                  | N                   | 50 t            | 10.32                                                  | 8.10                                          | 5.00                                 | 156                                               | 625       | 31.3                                | 125       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | —                                                      | —                                             | 5.24                                 | —                                                 | 665       | —                                   | 125       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 12.18                                                  | 9.56                                          | 5.00                                 | 183                                               | 731       | 36.5                                | 146       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | —                                                      | —                                             | 5.23                                 | —                                                 | 764       | —                                   | 146       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 15.13                                                  | 11.9                                          | 5.00                                 | 223                                               | 892       | 44.6                                | 178       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | —                                                      | —                                             | 5.22                                 | —                                                 | 931       | —                                   | 178       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 16.95                                                  | 13.3                                          | 5.00                                 | 247                                               | 989       | 49.5                                | 198       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | —                                                      | —                                             | 5.22                                 | —                                                 | 931       | —                                   | 178       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 22.34                                                  | 17.5                                          | 5.00                                 | 316                                               | 1263      | 63.2                                | 253       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | —                                                      | —                                             | 5.20                                 | —                                                 | 1310      | —                                   | 252       |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 1.056                                                  | 1.18                                          | 1.25                                 | 1.58                                              | 17.5      | 1.26                                | 14.0      |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 1.981                                                  | 1.56                                          | 1.25                                 | 2.01                                              | 22.3      | 1.60                                | 17.8      |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 3.482                                                  | 2.73                                          | 3.03                                 | 6.10                                              | 40.7      | 2.01                                | 13.4      |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 2.745                                                  | 2.73                                          | 2.79                                 | 5.36                                              | 35.8      | 1.92                                | 12.8      |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 4.918                                                  | 3.86                                          | 3.03                                 | 8.13                                              | 54.2      | 2.68                                | 17.9      |
|             |                           |               |              |     |     |       |     |                      |                     |                 | 4.719                                                  | 3.86                                          | 3.00                                 | 7.98                                              | 53.2      | 2.66                                | 17.8      |

Note: \*: Total sec. \*\*: Both ends

| Designation | Symbol of sectional shape | Dimensions mm |              |     |     |       |     | Symbol of end shape | Effective width | Sectional area $A$ cm <sup>2</sup> (per unit width) | Weight as rolled $W$ kg/m (per unit width) | Position of centre of gravity $y$ cm | Geometrical moment of inertia $I$ cm <sup>4</sup> |           | Section modulus $Z$ cm <sup>3</sup> |           |
|-------------|---------------------------|---------------|--------------|-----|-----|-------|-----|---------------------|-----------------|-----------------------------------------------------|--------------------------------------------|--------------------------------------|---------------------------------------------------|-----------|-------------------------------------|-----------|
|             |                           | $H$           | $W$ or $W_0$ | $B$ | $b$ | $b_1$ | $t$ | $r$                 |                 |                                                     |                                            |                                      | Unit width                                        | 1 m width | Unit width                          | 1 m width |
| APA 16      | A                         | 100           | 570          | 250 | 95  | 155   | 1.6 | 10                  | P               | *                                                   | 6.171                                      | 4.84                                 | 95.6                                              | 382       | 19.1                                | 76.5      |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | 78.3      |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.36                                 | —                                                 | 420       | —                                   | —         |
| APA 23      | A                         | 100           | 570          | 250 | 95  | 155   | 2.3 | 10                  | P               | *                                                   | 8.816                                      | 6.92                                 | 135                                               | 539       | 26.9                                | 108       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.35                                 | —                                                 | 592       | —                                   | 111       |
| APA 27      | A                         | 100           | 570          | 250 | 95  | 155   | 2.7 | 10                  | P               | *                                                   | 10.32                                      | 8.10                                 | 156                                               | 625       | 31.3                                | 125       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.35                                 | —                                                 | 681       | —                                   | 125       |
| APA 32      | A                         | 100           | 570          | 250 | 95  | 155   | 3.2 | 10                  | P               | *                                                   | 12.18                                      | 9.56                                 | 183                                               | 730       | 36.5                                | 146       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.34                                 | —                                                 | 801       | —                                   | 150       |
| APA 40      | A                         | 100           | 570          | 250 | 95  | 155   | 4.0 | 10                  | P               | *                                                   | 15.13                                      | 11.9                                 | 223                                               | 892       | 44.6                                | 178       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.33                                 | —                                                 | 926       | —                                   | 182       |
| APA 45      | A                         | 100           | 570          | 250 | 95  | 155   | 4.5 | 10                  | P               | *                                                   | 16.95                                      | 13.3                                 | 247                                               | 989       | 49.5                                | 198       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.33                                 | —                                                 | 1081      | —                                   | 203       |
| APA 60      | A                         | 100           | 570          | 250 | 95  | 155   | 6.0 | 10                  | P               | *                                                   | 22.34                                      | 17.5                                 | 316                                               | 1263      | 63.2                                | 253       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
|             |                           |               |              |     |     |       |     |                     |                 | **                                                  | —                                          | 5.30                                 | —                                                 | 1374      | —                                   | 259       |
|             |                           |               |              |     |     |       |     |                     |                 | *                                                   | 3.076                                      | 2.41                                 | 13.5                                              | 75.3      | 5.42                                | 30.1      |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | 2.882                                      | 2.34                                 | 12.3                                              | 68.4      | 4.62                                | 25.7      |
| AQA 12      | A                         | 50            | 270          | 180 | 80  | 100   | 1.2 | 1 t                 | Q               | *                                                   | 4.072                                      | 3.20                                 | 17.6                                              | 98.0      | 7.05                                | 39.2      |
|             |                           |               |              |     |     |       |     |                     |                 | —                                                   | —                                          | —                                    | —                                                 | —         | —                                   | —         |
| AQA 16      | A                         | 50            | 270          | 180 | 80  | 100   | 1.6 | 1 t                 | Q               | *                                                   | 5.600                                      | 4.40                                 | 108                                               | 720       | 17.4                                | 116       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
| AQB 16      | A                         | 121.6         | 300          | 150 | 52  | 90    | 1.6 | 1 t                 | Q               | *                                                   | 8.001                                      | 6.28                                 | 153                                               | 1020      | 24.5                                | 163       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
| AQB 23      | A                         | 122.3         | 300          | 150 | 52  | 90    | 2.3 | 1 t                 | Q               | *                                                   | 11.85                                      | 9.30                                 | 348                                               | 1400      | 66.6                                | 222       |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | —                                          | —                                    | —                                                 | —         | —                                   | —         |
| AQB 32      | A                         | 123.2         | 300          | 150 | 52  | 90    | 3.2 | 1 t                 | Q               | *                                                   | 3.376                                      | 2.65                                 | 12.5                                              | 61.1      | 3.67                                | 17.9      |
|             |                           |               |              |     |     |       |     |                     |                 | 50 t                                                | 2.402                                      | 2.79                                 | 9.33                                              | 45.5      | 3.34                                | 16.3      |
| ARA 12      | A                         | 50            | 614          | 205 | 40  | 60    | 1.2 | 1 t                 | R               | *                                                   | 4.472                                      | 3.41                                 | 16.3                                              | 79.4      | 4.78                                | 23.3      |
|             |                           |               |              |     |     |       |     |                     |                 | —                                                   | —                                          | —                                    | —                                                 | —         | —                                   | —         |
| ARA 16      | A                         | 50            | 614          | 205 | 40  | 60    | 1.6 | 1 t                 | R               | *                                                   | 3.513                                      | 3.00                                 | 13.5                                              | 65.8      | 4.50                                | 22.0      |

Note: \*: Total sec. \*\*: Both ends

| Designation | Symbol of sectional shape | Dimensions mm |              |       |     |       |     | Symbol of end shape         | Effective width | Sectional area $A$ cm <sup>2</sup><br>(Per unit width) | Weight as rolled $W$ kg/m<br>(per unit width) | Position of centre of gravity $y$ cm | Geometrical moment of inertia $I$ cm <sup>4</sup> |           | Section modulus $Z$ cm <sup>3</sup> |           |
|-------------|---------------------------|---------------|--------------|-------|-----|-------|-----|-----------------------------|-----------------|--------------------------------------------------------|-----------------------------------------------|--------------------------------------|---------------------------------------------------|-----------|-------------------------------------|-----------|
|             |                           | $H$           | $W$ or $W_0$ | $B$   | $b$ | $b_1$ | $t$ | Inside radius of corner $r$ |                 |                                                        |                                               |                                      | Unit width                                        | 1 m width | Unit width                          | 1 m width |
| BLA 12      | B                         | 50            | 614          | 204.7 | 50  | 70    | 1.2 | 1 t                         | *               | 3.584                                                  | 2.81                                          | 3.26                                 | 13.5                                              | 65.7      | 4.12                                | 20.1      |
| BLA 15      | B                         | 50            | 614          | 204.7 | 50  | 70    | 1.5 | 1 t                         | *               | 4.452                                                  | 3.49                                          | 3.26                                 | 16.5                                              | 80.5      | 5.06                                | 24.7      |
| BLB 08      | B                         | 75            | 690          | 230   | 88  | 103   | 0.8 | 1 t                         | *               | 2.906                                                  | 2.28                                          | 4.15                                 | 28.4                                              | 123       | 6.83                                | 29.7      |
| BLB 10      | B                         | 75            | 690          | 230   | 88  | 103   | 1.0 | 1 t                         | *               | 2.217                                                  | 2.84                                          | 3.15                                 | 18.7                                              | 81.5      | 4.31                                | 18.7      |
| BLB 12      | B                         | 75            | 690          | 230   | 88  | 103   | 1.2 | 1 t                         | *               | 3.621                                                  | 2.84                                          | 4.15                                 | 35.1                                              | 153       | 8.47                                | 36.8      |
| BLB 16      | B                         | 75            | 690          | 230   | 88  | 103   | 1.6 | 1 t                         | *               | 2.868                                                  | 3.40                                          | 3.31                                 | 25.1                                              | 109       | 5.98                                | 26.0      |
| BLC 12      | B                         | 75            | 690          | 230   | 88  | 103   | 1.2 | 1 t                         | *               | 4.332                                                  | 3.40                                          | 4.15                                 | 41.8                                              | 182       | 10.1                                | 43.8      |
| BLC 16      | B                         | 75            | 690          | 230   | 88  | 103   | 1.6 | 1 t                         | *               | 3.557                                                  | 4.51                                          | 3.45                                 | 31.9                                              | 139       | 7.89                                | 34.3      |
| BLC 23      | B                         | 75            | 690          | 230   | 88  | 103   | 1.6 | 1 t                         | *               | 5.741                                                  | 4.51                                          | 4.15                                 | 54.8                                              | 238       | 13.2                                | 57.4      |
| BLD 10      | B                         | 75            | 690          | 230   | 88  | 118   | 1.0 | 1 t                         | *               | 5.050                                                  | 3.00                                          | 3.72                                 | 46.8                                              | 203       | 12.4                                | 53.8      |
| BLD 12      | B                         | 75            | 690          | 230   | 88  | 118   | 1.2 | 1 t                         | *               | 3.822                                                  | 3.00                                          | 4.38                                 | 33.6                                              | 168       | 7.67                                | 38.4      |
| BLD 16      | B                         | 75            | 690          | 230   | 88  | 118   | 1.6 | 1 t                         | *               | 3.229                                                  | 3.98                                          | 3.83                                 | 27.5                                              | 137       | 7.18                                | 35.9      |
| BLD 23      | B                         | 75            | 690          | 230   | 88  | 118   | 1.6 | 1 t                         | *               | 5.066                                                  | 3.98                                          | 4.38                                 | 44.0                                              | 220       | 10.0                                | 50.2      |
| DKA 12      | D                         | 13            | 430          | 83    | 45  | 38    | 1.2 | 1 t                         | *               | 4.616                                                  | 5.66                                          | 4.10                                 | 40.0                                              | 200       | 9.77                                | 48.9      |
|             |                           |               |              |       |     |       |     |                             |                 | 7.209                                                  | 5.66                                          | 4.36                                 | 61.2                                              | 306       | 14.0                                | 70.1      |
|             |                           |               |              |       |     |       |     |                             |                 | 3.494                                                  | 2.74                                          | 3.99                                 | 33.4                                              | 145       | 8.36                                | 36.3      |
|             |                           |               |              |       |     |       |     |                             |                 | 2.894                                                  | 2.74                                          | 3.31                                 | 25.2                                              | 110       | 6.02                                | 26.2      |
|             |                           |               |              |       |     |       |     |                             |                 | 4.182                                                  | 3.28                                          | 4.01                                 | 39.7                                              | 173       | 9.91                                | 43.2      |
|             |                           |               |              |       |     |       |     |                             |                 | 3.589                                                  | 3.28                                          | 3.45                                 | 32.1                                              | 140       | 7.93                                | 34.5      |
|             |                           |               |              |       |     |       |     |                             |                 | 5.546                                                  | 4.35                                          | 4.01                                 | 52.0                                              | 226       | 13.0                                | 56.4      |
|             |                           |               |              |       |     |       |     |                             |                 | 5.096                                                  | 4.35                                          | 3.72                                 | 47.0                                              | 204       | 12.4                                | 54.0      |
|             |                           |               |              |       |     |       |     |                             |                 | 7.899                                                  | 6.20                                          | 3.99                                 | 72.6                                              | 316       | 18.2                                | 79.1      |
|             |                           |               |              |       |     |       |     |                             |                 | 1.305                                                  | 1.02                                          | 0.650                                | 0.387                                             | 4.66      | 0.595                               | 7.17      |

Note: \*: Total sec. \*\*: Both ends

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