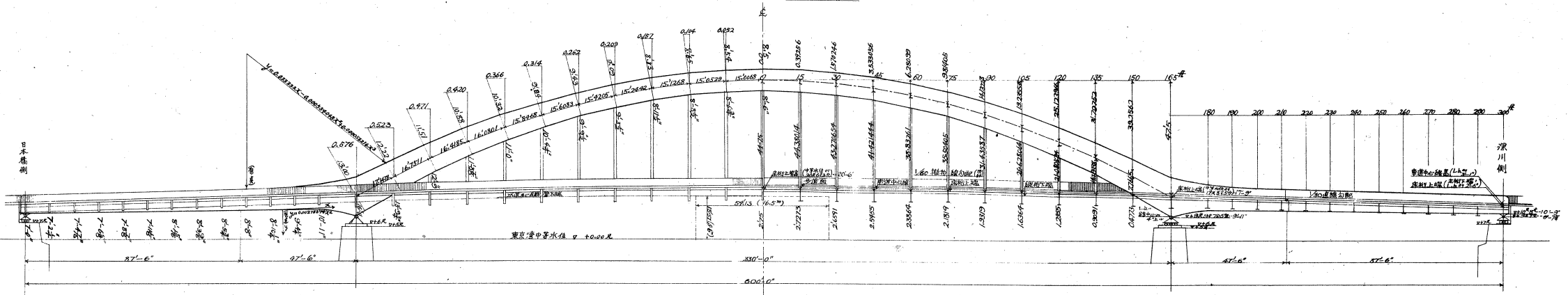


### 永代橋寸法圖

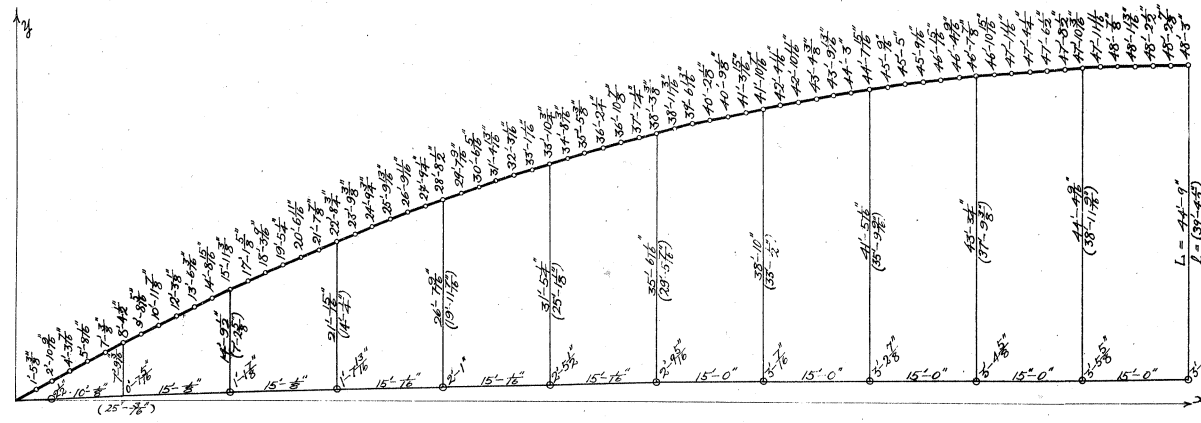
大正十四年十月三十日圖

縮尺 二百分之一



### 製作寸法圖

大正十五年一月圖



採用公式

1. Axial Depth, d

$$d = 8.5 + 4.5 \left( \frac{x}{L} \right)$$

1B. x = 換頂より水平距離  
L = 徑間長

2. Arch Axis.

$$y_0 = 0.0017 + 472x^2$$

$$y = 475 - y_0$$

3. 床桁上端 (Cent. of Eyebars)

$$y_0 = 0.000101x^2 = 0.0001x^2 \times 15 \times m^2$$

1B. m = No. of panels from d.

$$y_0 = 2.75 - y_0$$

4. 角度

$$\tan \theta = 0.00348944x$$

5. Curve Length of Arch Axis, S

$$S = \frac{1}{2} \sqrt{1 + \frac{dy^2}{dx^2}} + p \log_e \left( \frac{dy}{dx} + \sqrt{1 + \frac{dy^2}{dx^2}} \right)$$

1B. b = 換頂より水平距離  
p = 143.3

製作用式

1. Arch Axis.

$$y = \frac{48.25x}{27.225} (330 - x)$$

2. 床桁上端 (Tie, 中心線)

$$y = \frac{3.5x}{27.225} (330 - x)$$

3. Curve Length of Arch Axis, S

前出式中; p = 141.2

4. 吊材実長 l

$$l = L - \left( \frac{x}{L} + p + e \right) + R$$

1B. L = dist. bet. Rib Axis to 床桁上端.

V = Vert. depth of Rib.

P = Eye C. to 吊材上端.

R = Lb. of Rib to 吊材上端.

e = eccentricity.

5.  $\tan \theta = 0.003525(165 - x)$

Vert. depth	Curve Length	Eye C.	Rib Length	Actual Depth
16'-5"	0	0.000025	(14'-0")	(14'-0")
14'-10"	5	0.000200	(13'-5")	(13'-5")
14'-2"	10	0.000475	(12'-7")	(12'-7")
13'-9"	15	0.000750	(12'-2")	(12'-2")
13'-5"	20	0.001025	11'-11"	11'-11"
13'-3"	25	0.001300	11'-8"	11'-8"
12'-9"	30	0.001575	11'-6"	11'-6"
12'-5"	35	0.001850	11'-3"	11'-3"
12'-3"	40	0.002125	11'-1"	11'-1"
11'-8"	45	0.002400	10'-10"	10'-10"
11'-6"	50	0.002675	10'-8"	10'-8"
11'-3"	55	0.002950	10'-6"	10'-6"
11'-0"	60	0.003225	10'-3"	10'-3"
10'-9"	65	0.003500	10'-1"	10'-1"
10'-6"	70	0.003775	9'-11"	9'-11"
10'-4"	75	0.004050	9'-10"	9'-10"
10'-2"	80	0.004325	9'-8"	9'-8"
9'-11"	85	0.004600	9'-6"	9'-6"
9'-9"	90	0.004875	9'-5"	9'-5"
9'-7"	95	0.005150	9'-3"	9'-3"
9'-5"	100	0.005425	9'-2"	9'-2"
9'-3"	105	0.005700	9'-1"	9'-1"
9'-2"	110	0.005975	9'-0"	9'-0"
9'-1"	115	0.006250	8'-10"	8'-10"
8'-11"	120	0.006525	8'-10"	8'-10"
8'-10"	125	0.006800	8'-9"	8'-9"
8'-9"	130	0.007075	8'-8"	8'-8"
8'-8"	135	0.007350	8'-7"	8'-7"
8'-7"	140	0.007625	8'-7"	8'-7"
8'-6"	145	0.007900	8'-6"	8'-6"
8'-6"	150	0.008175	8'-6"	8'-6"
8'-6"	155	0.008450	8'-6"	8'-6"
8'-6"	160	0.008725	8'-6"	8'-6"
8'-6"	165	0	8'-6"	8'-6"

永代橋  
中央徑間 (突桁繫拱)  
支間 { 繫拱 1.330<sup>m</sup>  
          突桁 2.47<sup>m</sup>  
拱腹中心間 60<sup>m</sup>