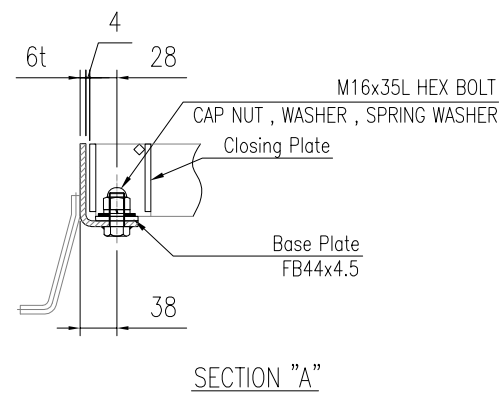
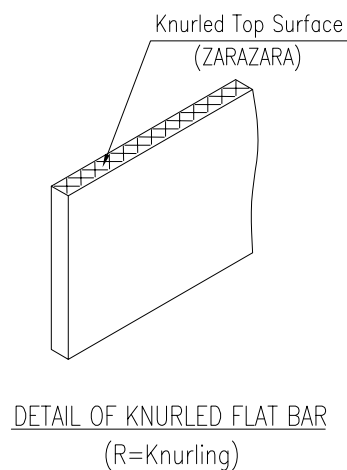


DETAIL GRATING FOR GUTTER SPAN 600 MM.  
(Q'TY 1 SET.)



**NOTE**

- TYPE OF GRATING : RFB85x6 BBP=35.3 , TB6x6 TBP=100  
END PLATE : FB80x6
- TYPE OF FRAME : PL-96x60x6t (Bending Type)
- SURFACE FINISHING GRATING : HOT DIP GALVANIZED ASTM (A123)
- SURFACE FINISHING FRAME : HOT DIP GALVANIZED ASTM (A123)
- DESIGN CONDITION LOAD : HEAVY DUTY T-25 (Parallel to main structure)  
Impact coefficient = 0.4

PROJECT TITLE		Typical_Drawing							
CHECKED BY	CHATCHAI	DETAIL GRATING FOR GUTTER			1				
DRAWN BY	THITIKORN.P	Span = 600			2	1			
DATE DRAWN	27/04/2020	DDR NO.	DDR20178	JOB NO.	-	DWG.NO.	DW20178F05	REV.	0
1	07/05/2020	Add Page 1/2		SCALE	NTS				
REV.	REV.DATE	DESCRIPTION							

**1. Design Condition**

**Load T-25**

Load on one rear wheel  $P = 100$  kN.  
 Contact area  $a \times b = 20$  cm.  $\times$   $50$  cm.

**Vehicle direction Parallel to main structure**

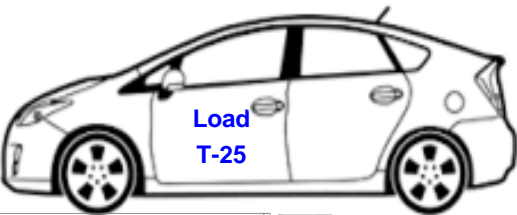
Impact coefficient  $i = 0.4$

**Span  $L = 60$  cm. ( $L' = 60$  cm.)**

Allowable stress  $\sigma_a = 18$  kN / cm<sup>2</sup> **18**

Allowable bending  $\delta/L = 1 / 300$

← *Input*



Parallel to main structure

**2. Grating, Cressection performance**

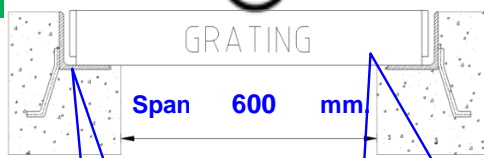
**Main structure FB85x6**

**Pitch (p) = 3.53 cm.**

Cross-sectional performance, others • Geometrical moment of iner  
 $I = 30.706$  cm<sup>4</sup>/piece

• Section modulus  
 $Z = 7.225$  cm<sup>3</sup>/piece

• Young's modulus  
 $E = 20000$  kN / cm<sup>2</sup>



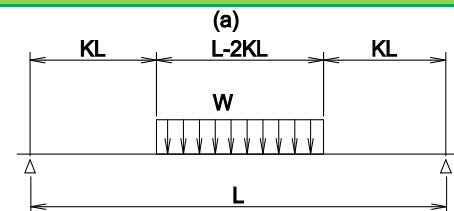
Frame

Grating : **FB85x6**  
 BB Pitch : **35.3 mm.**

**3. Load, Bending moment**

**3.1 Loading form**

$$K = \frac{L - a}{2L} = \frac{60 - 20}{2 \times 60} = 0.333$$



**3.2 Load (per unit area : kN/cm2)**

$$w = \frac{P(1+i)}{a b} = \frac{100 \times (1 + 0.4)}{20 \times 50} = 0.14$$

**3.3 Load (main structure per one : kN)**

$$W = w p (L - 2 K L) = 0.14 \times 3.53 \times (60 - 2 \times 0.333 \times 60) = 9.9$$

**3.4 Bending moment (: kN · cm)**

$$M = \frac{W(L + 2 K L)}{8} = \frac{9.9 \times (60 + 2 \times 0.333 \times 60)}{8} = 124$$

**4. Stress**

$$\sigma = \frac{M}{Z} = \frac{124}{7.225}$$

$$= 17.12 \text{ kN / cm}^2 \leq \sigma_a \text{ kN / cm}^2 \quad \text{O.K.}$$

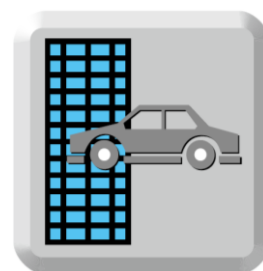
**5. Bending (Deflection)**

$$\delta = \frac{W L^3 (1 + 2 K) (5 - 4 K^2)}{384 E I}$$

$$= \frac{9.9 \times 60^3 \times (1 + 2 \times 0.333) \times (5 - 4 \times 0.333^2)}{384 \times 20000 \times 30.706}$$

$$= 0.0688 \text{ cm.}$$

$$\delta/L = 1 / 872 \leq 1 / 300 \quad \text{O.K.}$$



Parallel to main structure