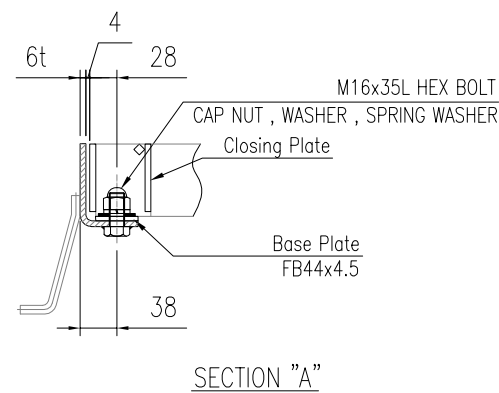
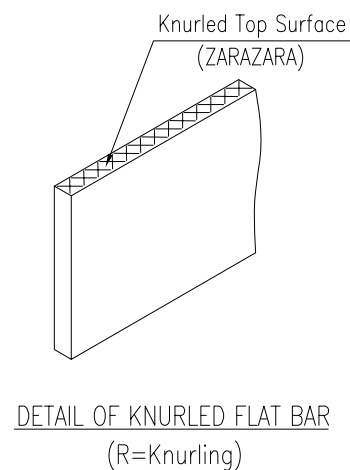


DETAIL GRATING FOR GUTTER SPAN 200 MM.  
 (Q'TY 1 SET.)



**NOTE**

1. TYPE OF GRATING : RFB40x6 BBP=35.3 , TB6x6 TBP=100  
 END PLATE : FB32x6
2. TYPE OF FRAME : PL-51x60x6t (Bending Type)
3. SURFACE FINISHING GRATING : HOT DIP GALVANIZED ASTM (A123)
4. SURFACE FINISHING FRAME : HOT DIP GALVANIZED ASTM (A123)
5. 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 = 200			2	1			
DATE DRAWN	27/04/2020	DDR NO.	DDR20178	JOB NO.	-	DWG. NO.	DW20178F01	REV.	0
SCALE	NTS	DAIKURE (THAILAND) CO. , LTD.							

1	07/05/2020	Add Page 1/2
REV.	REV. DATE	DESCRIPTION

**1. Design Condition**

**Load T-25**

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

**Vehicle direction Parallel to main structure**

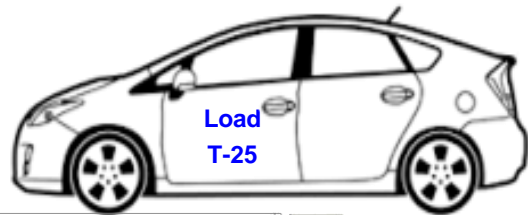
Impact coefficient  $i = 0.4$

**Span  $L = 20 \text{ cm.}$  ( $L' = 20 \text{ cm.}$ )**

Allowable stress  $\sigma_a = 18 \text{ kN/cm}^2$  **18**

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

← *Input*



**2. Grating, Cressection performance**

**Main structure FB40x6**

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

Cross-sectional performance, others • Geometrical moment of iner  $I = 3.2 \text{ cm}^4/\text{piece}$

• Section modulus  $Z = 1.6 \text{ cm}^3/\text{piece}$

• Young's modulus  $E = 20000 \text{ kN/cm}^2$



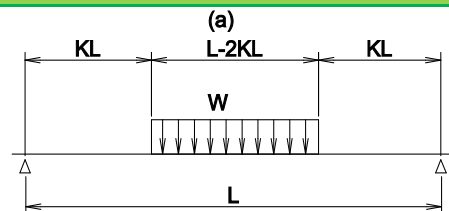
**Frame**

**Grating : FB40x6  
BB Pitch : 35.3 mm.**

**3. Load, Bending moment**

**3.1 Loading form**

$$K = \frac{L - a}{2L} = \frac{20 - 20}{2 \times 20} = 0.000$$



**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)**

$$W = w p (L - 2KL) = 0.14 \times 3.53 \times (20 - 2 \times 0 \times 20) = 9.9$$

**3.4 Bending moment (: kN · cm)**

$$M = \frac{W(L + 2KL)}{8} = \frac{9.9 \times (20 + 2 \times 0 \times 20)}{8} = 25$$

**4. Stress**

$$\sigma = \frac{M}{Z} = \frac{25}{1.6}$$

$$= 15.44 \text{ kN/cm}^2 \leq \sigma_a \text{ kN/cm}^2 \quad \text{O.K.}$$

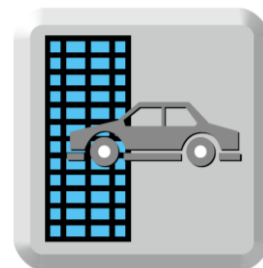
**5. Bending (Deflection)**

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

$$= \frac{9.9 \times 20^3 \times (1 + 2 \times 0) \times (5 - 4 \times 0^2)}{384 \times 20000 \times 3.2}$$

$$= 0.0161 \text{ cm.}$$

$$\delta/L = 1 / 1242 \leq 1 / 300 \quad \text{O.K.}$$



Parallel to main structure