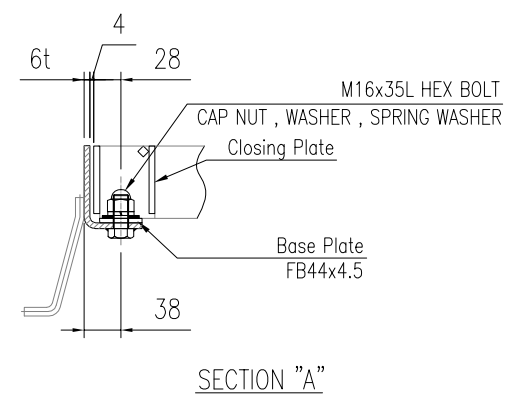
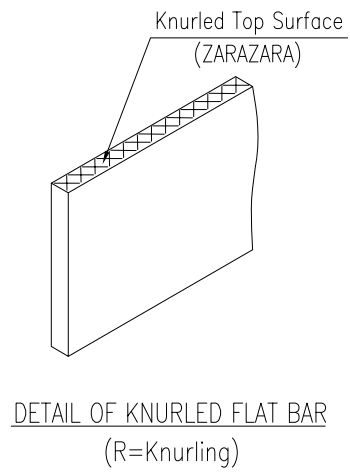


DETAIL GRATING FOR GUTTER SPAN 300 MM.  
(Q'TY 1 SET.)



- NOTE**
- TYPE OF GRATING : RFB40x6 BBP=35.3 , TB6x6 TBP=100  
END PLATE : FB32x6
  - TYPE OF FRAME : PL-51x60x6t (Bending Type)
  - SURFACE FINISHING GRATING : HOT DIP GALVANIZED ASTM (A123)
  - SURFACE FINISHING FRAME : HOT DIP GALVANIZED ASTM (A123)
  - DESIGN CONDITION LOAD : HEAVY DUTY T-14 (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 = 300				2	1
DATE DRAWN	23/04/2020	DDR NO.	DDR20176	JOB NO.	-	DWG.NO.	DW20176F02
REV.	REV.DATE	DESCRIPTION		SCALE	NTS	DAIKURE (THAILAND) CO. , LTD.	
1	05/05/2020	Add Page 1/2					

**1. Design Condition**

← Input

**Load T-14**

Load on one rear wheel P = 56 kN.  
Contact area a x b = 20 cm. x 50 cm.

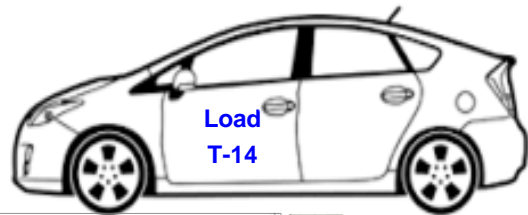
**Vehicle direction Parallel to main structure**

Impact coefficient i = 0.4

**Span L = 30 cm. (L' = 30 cm.)**

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

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



**2. Grating, Cressection performance**

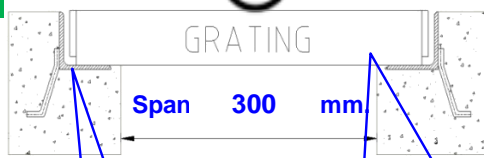
**Main structure FB40x6**

**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  
 $E = 20000 \text{ kN/cm}^2$



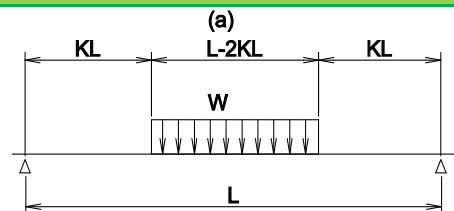
**Frame**

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

**3. Load, Bending moment**

**3.1 Loading form**

$$K = \frac{L - a}{2L} = \frac{30 - 20}{2 \times 30} = 0.167$$



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

$$w = \frac{P(1+i)}{a b} = \frac{56 \times (1 + 0.4)}{20 \times 50} = 0.0784$$

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

$$W = w p (L - 2 K L) = 0.0784 \times 3.53 \times (30 - 2 \times 0.167 \times 30) = 5.5$$

**3.4 Bending moment (: kN · cm)**

$$M = \frac{W(L + 2 K L)}{8} = \frac{5.5 \times (30 + 2 \times 0.167 \times 30)}{8} = 28$$

**4. Stress**

$$\sigma = \frac{M}{Z} = \frac{28}{1.6} = 17.29 \text{ kN/cm}^2 \leq \sigma_a \text{ kN/cm}^2$$

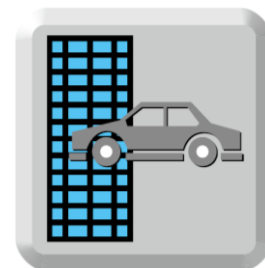
**O.K.**

**5. Bending (Deflection)**

$$\delta = \frac{W L^3 (1 + 2 K) (5 - 4 K^2)}{384 E I} = \frac{5.5 \times 30^3 \times (1 + 2 \times 0.167) \times (5 - 4 \times 0.167^2)}{384 \times 20000 \times 3.2} = 0.0396 \text{ cm.}$$

$$\delta/L = 1 / 758 \leq 1 / 300$$

**O.K.**



**Parallel to main structure**