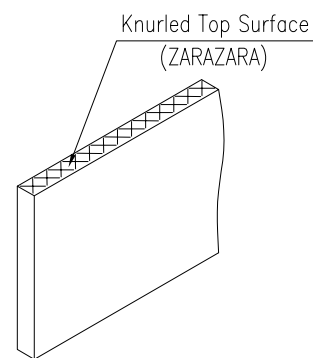
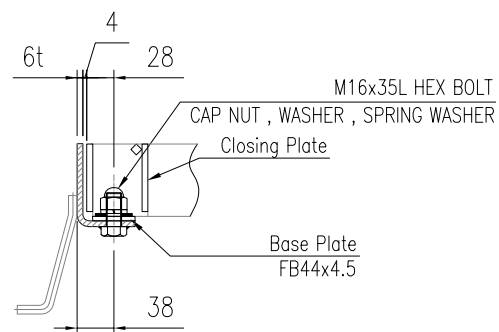


DETAIL GRATING FOR GUTTER SPAN 800 MM.  
(Q'TY 1 SET.)



DETAIL OF KNURLED FLAT BAR  
(R=Knurling)



SECTION "A"

NOTE

1. TYPE OF GRATING : RFB90x6 BBP=35.3 , TB7x7 TBP=100  
END PLATE : FB80x6
2. TYPE OF FRAME : PL-101x60x6t (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-20 (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 = 800				2	1
DATE DRAWN	24/04/2020	DDR NO.	DDR20177	JOB NO.	-	DWG. NO.	DW20177F07
REV.		REV.		REV.		REV.	0

1	06/05/2020	Add Page 1/2
REV.	REV. DATE	DESCRIPTION

SCALE

NTS



DAIKURE (THAILAND) CO. , LTD.

**1. Design Condition**

**Load T-20**

Load on one rear whee P = 80 kN.  
Contact area a x b = 20 cm. x 50 cm.

**Vehicle direction Parallel to main structure**

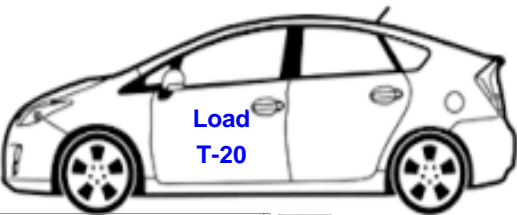
Impact coefficient i = 0.4

**Span L = 80 cm. (L' = 80 cm.)**

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

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

← *Input*



Parallel to main structure

**2. Grating, Cressection performance**

**Main structure FB90x6**

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

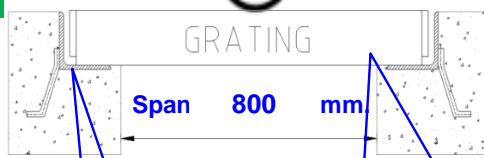
Cross-sectional performance, others • Geometrical moment of iner  
 $I = 36.45 \text{ cm}^4/\text{piece}$

• Section modulus

$Z = 8.1 \text{ cm}^3/\text{piece}$

• Young's modulus

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



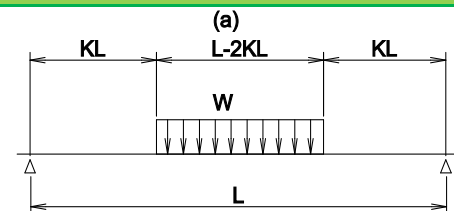
Frame

Grating : **FB90x6**  
BB Pitch : **35.3 mm.**

**3. Load, Bending moment**

**3.1 Loading form**

$$K = \frac{L - a}{2L} = \frac{80 - 20}{2 \times 80} = 0.375$$



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

$$w = \frac{P(1+i)}{a b} = \frac{80 \times (1 + 0.4)}{20 \times 50} = 0.112$$

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

$$W = w p (L - 2 K L) = 0.112 \times 3.53 \times (80 - 2 \times 0.375 \times 80) = 7.9$$

**3.4 Bending moment (: kN · cm)**

$$M = \frac{W(L + 2 K L)}{8} = \frac{7.9 \times (80 + 2 \times 0.375 \times 80)}{8} = 138$$

**4. Stress**

$$\sigma = \frac{M}{Z} = \frac{138}{8.1}$$

$$= 17.09 \text{ kN/cm}^2 \leq \sigma_a \text{ kN/cm}^2 \quad \text{O.K.}$$

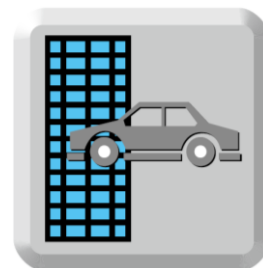
**5. Bending (Deflection)**

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

$$= \frac{7.9 \times 80^3 \times (1 + 2 \times 0.375) \times (5 - 4 \times 0.375^2)}{384 \times 20000 \times 36.45}$$

$$= 0.1123 \text{ cm.}$$

$$\delta/L = 1 / 712 \leq 1 / 300 \quad \text{O.K.}$$



Parallel to main structure