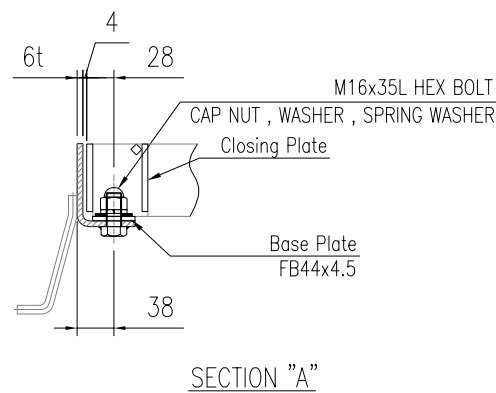
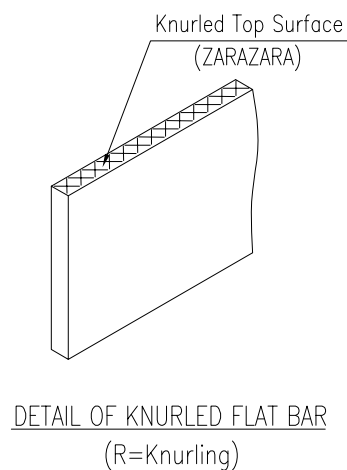


DETAIL GRATING FOR GUTTER SPAN 700 MM.
(Q'TY 1 SET.)



NOTE

- TYPE OF GRATING : RFB95x6 BBP=35.3 , TB7x7 TBP=100
END PLATE : FB80x6
- TYPE OF FRAME : PL-106x60x6t (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 = 700				2	1
DATE DRAWN	27/04/2020	DDR NO.	DDR20178	JOB NO.	-	DWG.NO.	DW20178F06
REV.		REV.		REV.		REV.	

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

SCALE	NTS	DAIKURE (THAILAND) CO. , LTD.	
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1. Design Condition

← Input

Load T-25

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

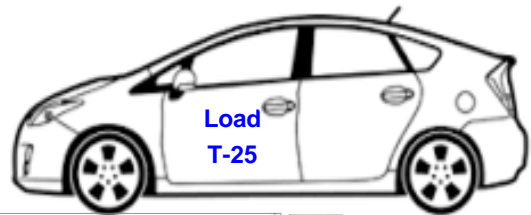
Vehicle direction Parallel to main structure

Impact coefficient $i = 0.4$

Span $L = 70 \text{ cm.}$ ($L' = 70 \text{ cm.}$)

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

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



2. Grating, Cressection performance

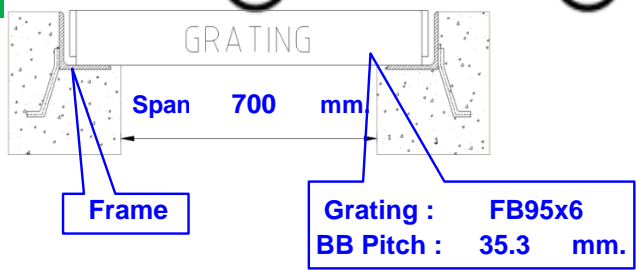
Main structure FB95x6

Pitch (p) = 3.53 cm.

Cross-sectional performance, others • Geometrical moment of iner
 $I = 42.869 \text{ cm}^4/\text{piece}$

• Section modulus
 $Z = 9.025 \text{ cm}^3/\text{piece}$

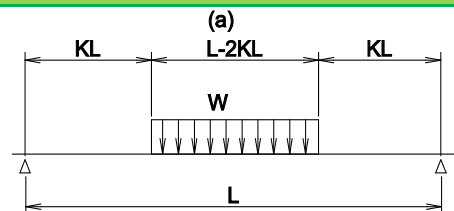
• Young's modulus
 $E = 20000 \text{ kN/cm}^2$



3. Load, Bending moment

3.1 Loading form

$$K = \frac{L - a}{2L} = \frac{70 - 20}{2 \times 70} = 0.357$$



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)

$$W = w p (L - 2 K L) = 0.14 \times 3.53 \times (70 - 2 \times 0.357 \times 70) = 9.9$$

3.4 Bending moment (: kN · cm)

$$M = \frac{W(L + 2 K L)}{8} = \frac{9.9 \times (70 + 2 \times 0.357 \times 70)}{8} = 148$$

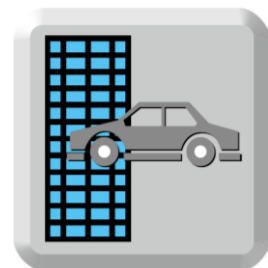
4. Stress

$$\sigma = \frac{M}{Z} = \frac{148}{9.025} = 16.44 \text{ kN/cm}^2 \leq \sigma_a \text{ kN/cm}^2 \text{ O.K.}$$

5. Bending (Deflection)

$$\delta = \frac{W L^3 (1 + 2 K) (5 - 4 K^2)}{384 E I} = \frac{9.9 \times 70^3 \times (1 + 2 \times 0.357) \times (5 - 4 \times 0.357^2)}{384 \times 20000 \times 42.869} = 0.0793 \text{ cm.}$$

$$\delta/L = 1 / 883 \leq 1 / 300 \text{ O.K.}$$



Parallel to main structure