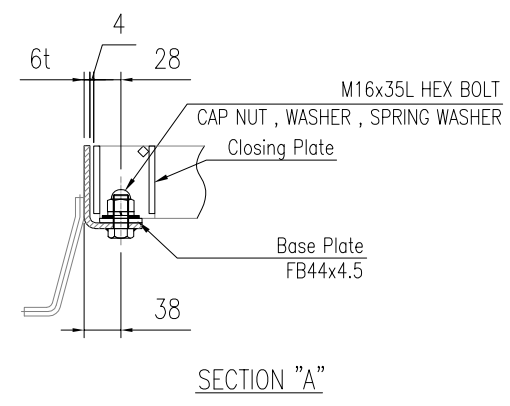
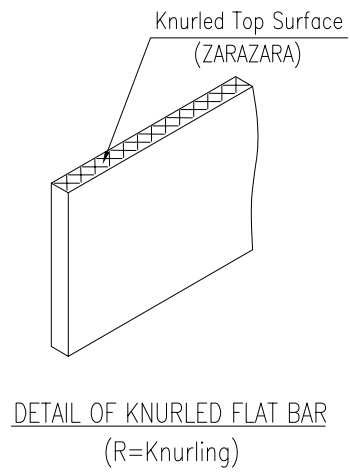


DETAIL GRATING FOR GUTTER SPAN 500 MM.
(Q'TY 1 SET.)



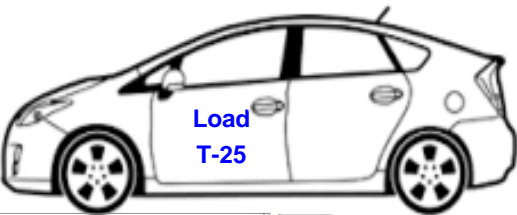
- NOTE
- TYPE OF GRATING : RFB75x6 BBP=35.3 , TB6x6 TBP=100
END PLATE : FB70x6
 - TYPE OF FRAME : PL-86x60x6t (Bending Type)
 - SURFACE FINISHING GRATING : HOT DIP GALVANIZED ASTM (A123)
 - SURFACE FINISHING FRAME : HOT DIP GALVANIZED ASTM (A123)
 - DESIGN CONDITION LOAD : HEAVY DUTY T-25 (Parallel to main structure)
Impact coefficient = 0.4

PROJECT TITLE		Typical_Drawing					
CHECKED BY	CHATCHAI	DETAIL GRATING FOR GUTTER				1	
DRAWN BY	THITIKORN.P	Span = 500				2	1
DATE DRAWN	27/04/2020	DDR NO.	DDR20178	JOB NO.	-	DWG.NO.	DW20178F04
REV.	REV.DATE	DESCRIPTION					
1	07/05/2020	Add Page 1/2					
SCALE	NTS						

1. Design Condition

Load **T-25**
 Load on one rear wheel P = 100 kN.
 Contact area a x b = 20 cm. x 50 cm.
Vehicle direction **Parallel to main structure**
 Impact coefficient i = 0.4
Span **L = 50 cm.** (L' = 50 cm.)
 Allowable stress $\sigma_a = 18$ kN / cm² **18**
 Allowable bending $\delta/L = 1 / 300$

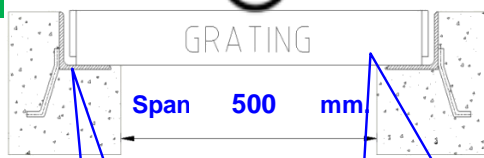
← *Input*



Parallel to main structure

2. Grating, Cressection performance

Main structure **FB75x6**
Pitch (p) = **3.53 cm.**
 Cross-sectional performance, others
 • Geometrical moment of iner I = 21.094 cm⁴/piece
 • Section modulus Z = 5.62 cm³/piece
 • Young's modulus E = 20000 kN / cm²



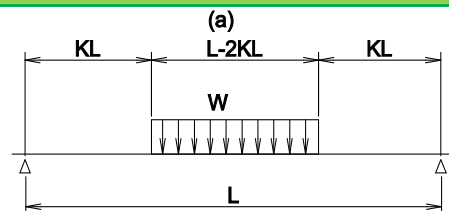
Frame

Grating : **FB75x6**
 BB Pitch : **35.3 mm.**

3. Load, Bending moment

3.1 Loading form

$$K = \frac{L - a}{2L} = \frac{50 - 20}{2 \times 50} = 0.300$$



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)

$$W = w p (L - 2KL) = 0.14 \times 3.53 \times (50 - 2 \times 0.3 \times 50) = 9.9$$

3.4 Bending moment (: kN · cm)

$$M = \frac{W(L + 2KL)}{8} = \frac{9.9 \times (50 + 2 \times 0.3 \times 50)}{8} = 99$$

4. Stress

$$\sigma = \frac{M}{Z} = \frac{99}{5.62} = 17.58 \text{ kN / cm}^2 \leq \sigma_a \text{ kN / cm}^2$$

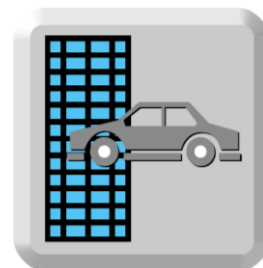
O.K.

5. Bending (Deflection)

$$\delta = \frac{W L^3 (1 + 2K) (5 - 4K^2)}{384 E I} = \frac{9.9 \times 50^3 \times (1 + 2 \times 0.3) \times (5 - 4 \times 0.3^2)}{384 \times 20000 \times 21.094} = 0.0566 \text{ cm.}$$

$$\delta/L = 1 / 883 \leq 1 / 300$$

O.K.



Parallel to main structure