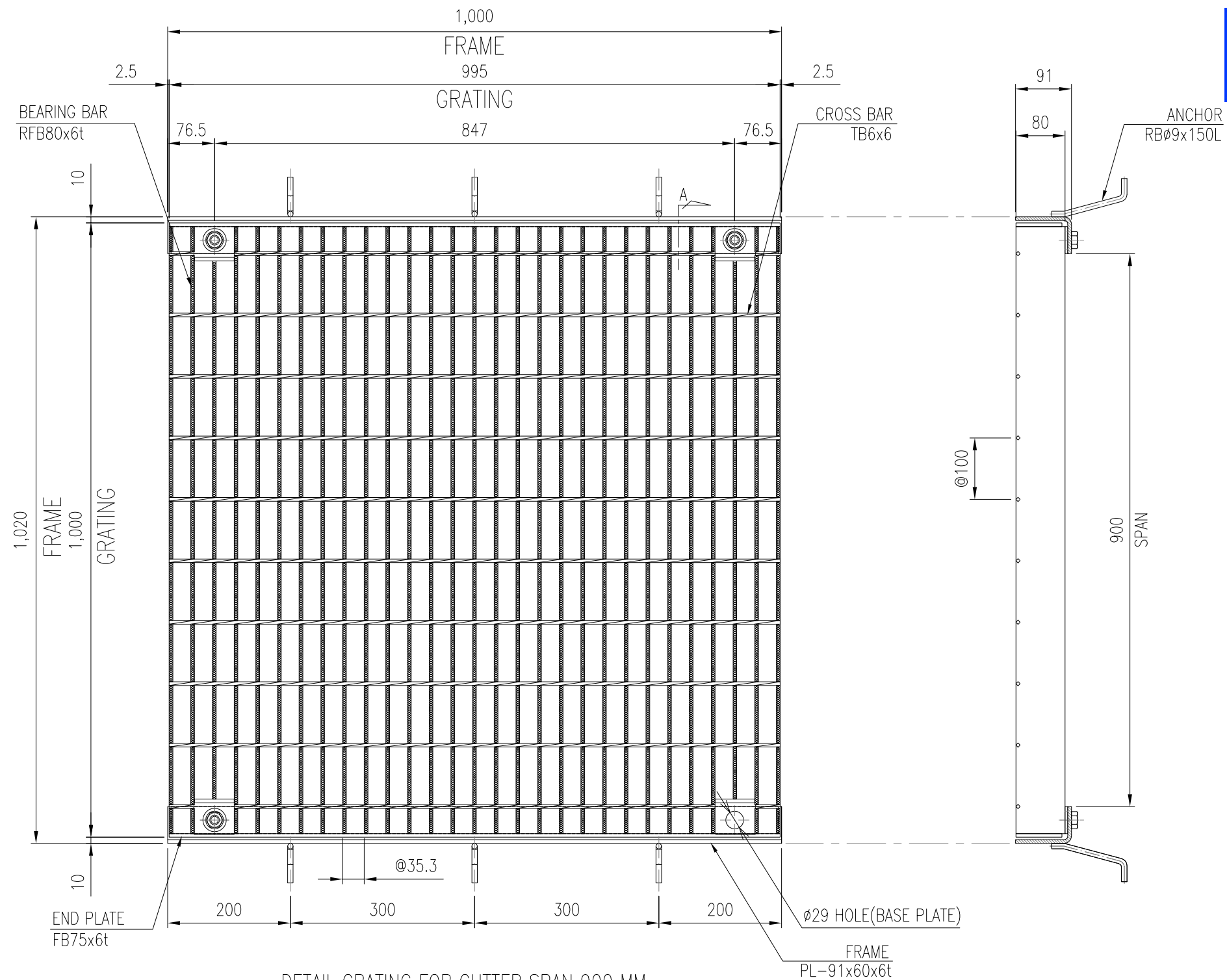
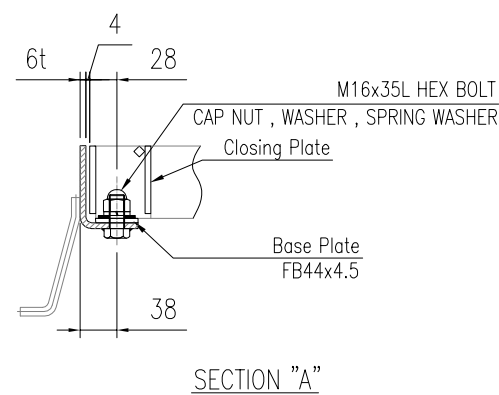
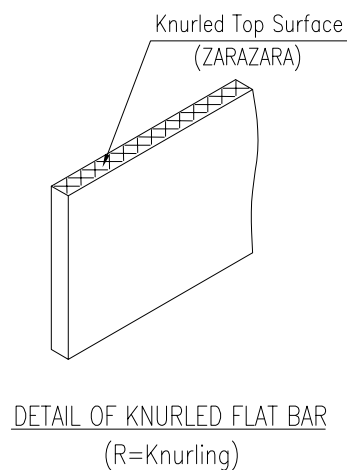


Parallel to main structure
Transverse Trench
Direction of Vehicles



DETAIL GRATING FOR GUTTER SPAN 900 MM.
(Q'TY 1 SET.)



NOTE

- TYPE OF GRATING : RFB80x6 BBP=35.3 , TB6x6 TBP=100
END PLATE : FB75x6
- TYPE OF FRAME : PL-91x60x6t (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 = 900			2	1			
DATE DRAWN	23/04/2020	DDR NO.	DDR20176	JOB NO.	-	DWG.NO.	DW20176F08	REV.	0
SCALE	NTS		DAIKURE (THAILAND) CO. , LTD.						

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

1. Design Condition

← Input

Load T-14

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

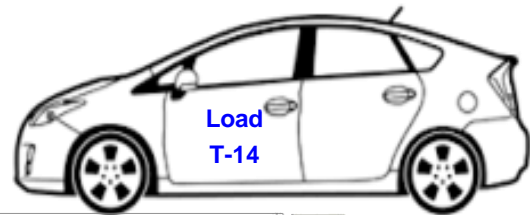
Vehicle direction Parallel to main structure

Impact coefficient $i = 0.4$

Span $L = 90$ cm. ($L' = 90$ cm.)

Allowable stress $\sigma_a = 18$ kN / cm² **18**

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



2. Grating, Cressection performance

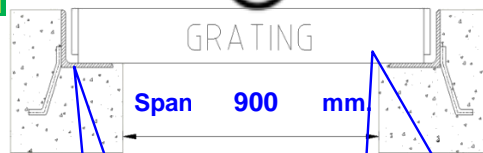
Main structure FB80x6

Pitch (p) = 3.53 cm.

Cross-sectional performance, others • Geometrical moment of iner
 $I = 25.6$ cm⁴/piece

• Section modulus
 $Z = 6.4$ cm³/piece

• Young's modulus
 $E = 20000$ kN / cm²



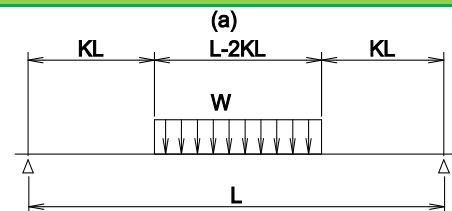
Frame

Grating : **FB80x6**
 BB Pitch : **35.3 mm.**

3. Load, Bending moment

3.1 Loading form

$$K = \frac{L - a}{2L} = \frac{90 - 20}{2 \times 90} = 0.389$$



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)

$$W = w p (L - 2 K L) = 0.0784 \times 3.53 \times (90 - 2 \times 0.389 \times 90) = 5.5$$

3.4 Bending moment (: kN · cm)

$$M = \frac{W(L + 2 K L)}{8} = \frac{5.5 \times (90 + 2 \times 0.389 \times 90)}{8} = 111$$

4. Stress

$$\sigma = \frac{M}{Z} = \frac{111}{6.4}$$

$$= 17.28 \text{ kN / cm}^2 \leq \sigma_a \text{ kN / cm}^2 \quad \text{O.K.}$$

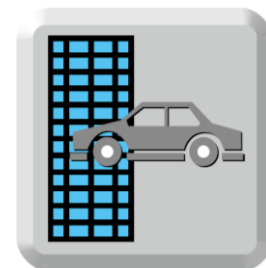
5. Bending (Deflection)

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

$$= \frac{5.5 \times 90^3 \times (1 + 2 \times 0.389) \times (5 - 4 \times 0.389^2)}{384 \times 20000 \times 25.6}$$

$$= 0.1602 \text{ cm.}$$

$$\delta/L = 1 / 562 \leq 1 / 300 \quad \text{O.K.}$$



Parallel to main structure