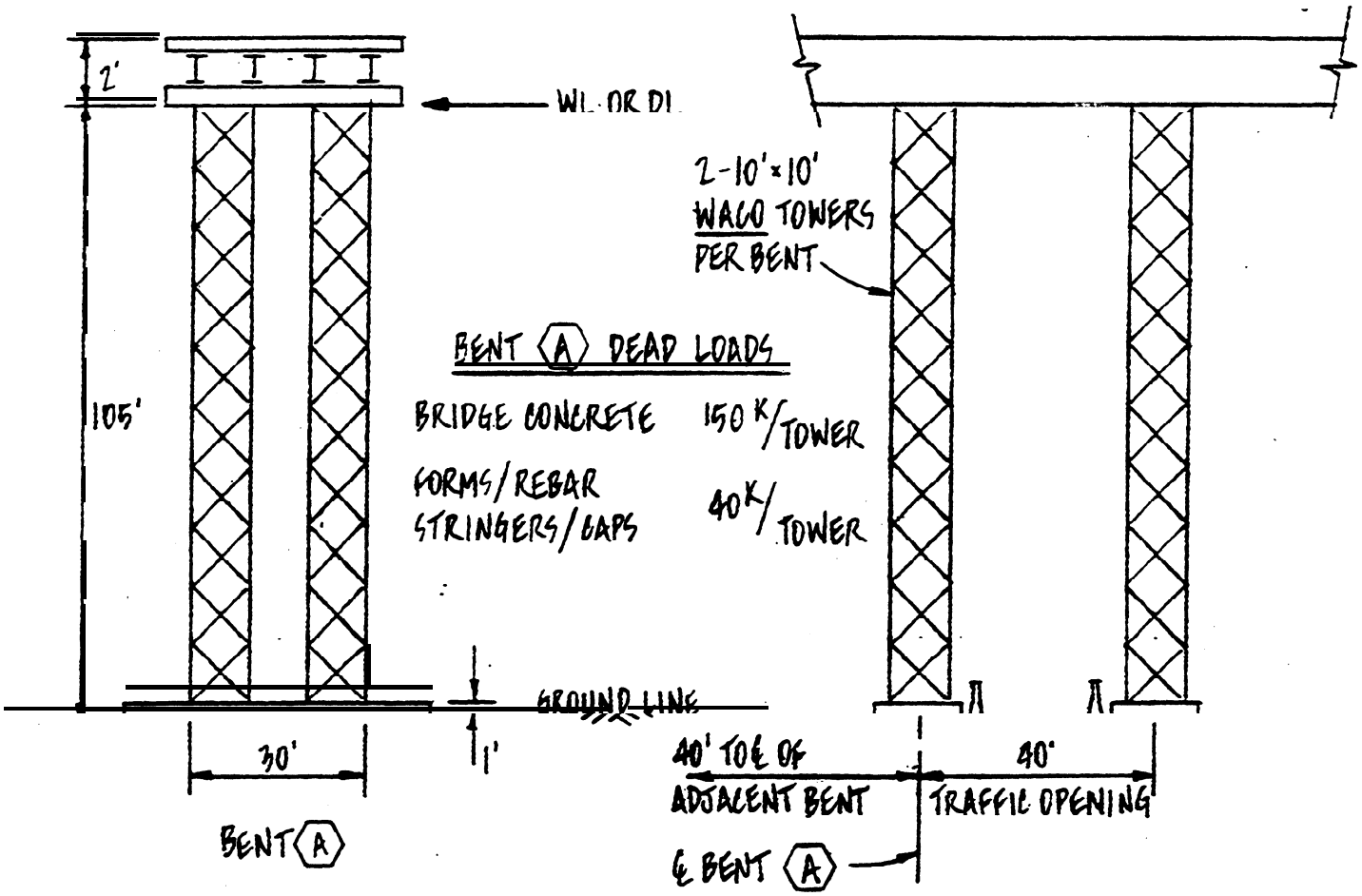
EXAMPLE NO. 8
WIND LOADS ON HEAVY-DUTY FALSEWORK, AND HORIZONTAL 2% DEAD LOAD



DETERMINE THE HORIZONTAL DESIGN WIND LOAD, WL, FOR BENT (A)

1. SELECT THE WIND PRESSURE VALUES FOR EACH HEIGHT ZONE ABOVE THE GROUND FROM SECTION 51-1.06(A) OF THE STANDARD SPECIFICATIONS

2. CALCULATE THE DESIGN WIND PRESSURE FOR EACH HEIGHT ZONE
   SHAPE FACTOR FOR HEAVY-DUTY FALSEWORK = 2.2
   DRAG COEFFICIENT FOR CONVENTIONAL FALSEWORK = $1+0.2W = 1+0.2(30) = 7 < 10 \therefore Q = 7$

HEIGHT ZONE	FW TYPE	1	2
0'-30'	HEAVY DUTY	20 PSF	20 PSF × 2.2 = 44 PSF
30-50	"	25	25 × 2.2 = 55
50-100	"	30	30 × 2.2 = 66
100-105	"	35	35 × 2.2 = 77
105-107	CONVENTIONAL	3.5Q	3.5(7) = 24.5

③ CALCULATE THE TOTAL WIND LOAD <u>PER TOWER</u> FOR EACH HEIGHT ZONE

FOR TOWER SECTION, FULL WL IS APPLIED TO EACH TOWER
*FOR SUPPORTED FW SECTION, 0.5 WL IS APPLIED TO EACH TOWER
FOR WACO SHORING, 2 LEGS/FACE, USE PROJECTED AREA = 2.00 SF/FT

} SEE FIGURES 3, THRU 3-4 IN SECT. 3-1.05A OF FWMAN

④ CALCULATE THE OVERTURNING MOMENT ABOUT THE BASE OF THE TOWER

HEIGHT ZONE	②	③	④
0 - 30	44 PSF	44 PSF × 2.00 × 30' = 2640#	2640# × 14' = 36960
30 - 50	55	55 × 2.00 × 20' = 2200	2200 × 39' = 85800
50 - 100	66	66 × 2.00 × 50' = 6600	6600 × 74' = 488400
100 - 105	77	77 × 2.00 × 5' = 770	770 × 101.5' = 78155
105 - 107	24.5	24.5 × 2 × 40' × 0.5* = 980	980 × 105 = <u>102900</u>

TOTAL OVERTURNING MOMENT = 792215'#

⑤ CALCULATE THE HORIZONTAL DESIGN WIND LOAD AT THE TOP OF THE TOWER.

$$\frac{792215'\#}{104'} = 7617\#$$

<u>DETERMINE THE HORIZONTAL DESIGN 2% DEAD LOAD, DL, FOR BENT (A)</u>

DEAD LOAD-BRIDGE CONCRETE	150 K/TOWER
DEAD LOAD-FORMS/REBAR/STRINGERS/CAPS	40 K/TOWER
	190 K/TOWER

2% DEAD LOAD = 0.02 × 190 K = 3.8 K = 3800#

<u>DETERMINE THE CONTROLLING HORIZONTAL DESIGN LOAD</u>

WIND LOAD = 7630#
2% DEAD LOAD = 3800#

} HORIZONTAL DESIGN LOAD = 7630#