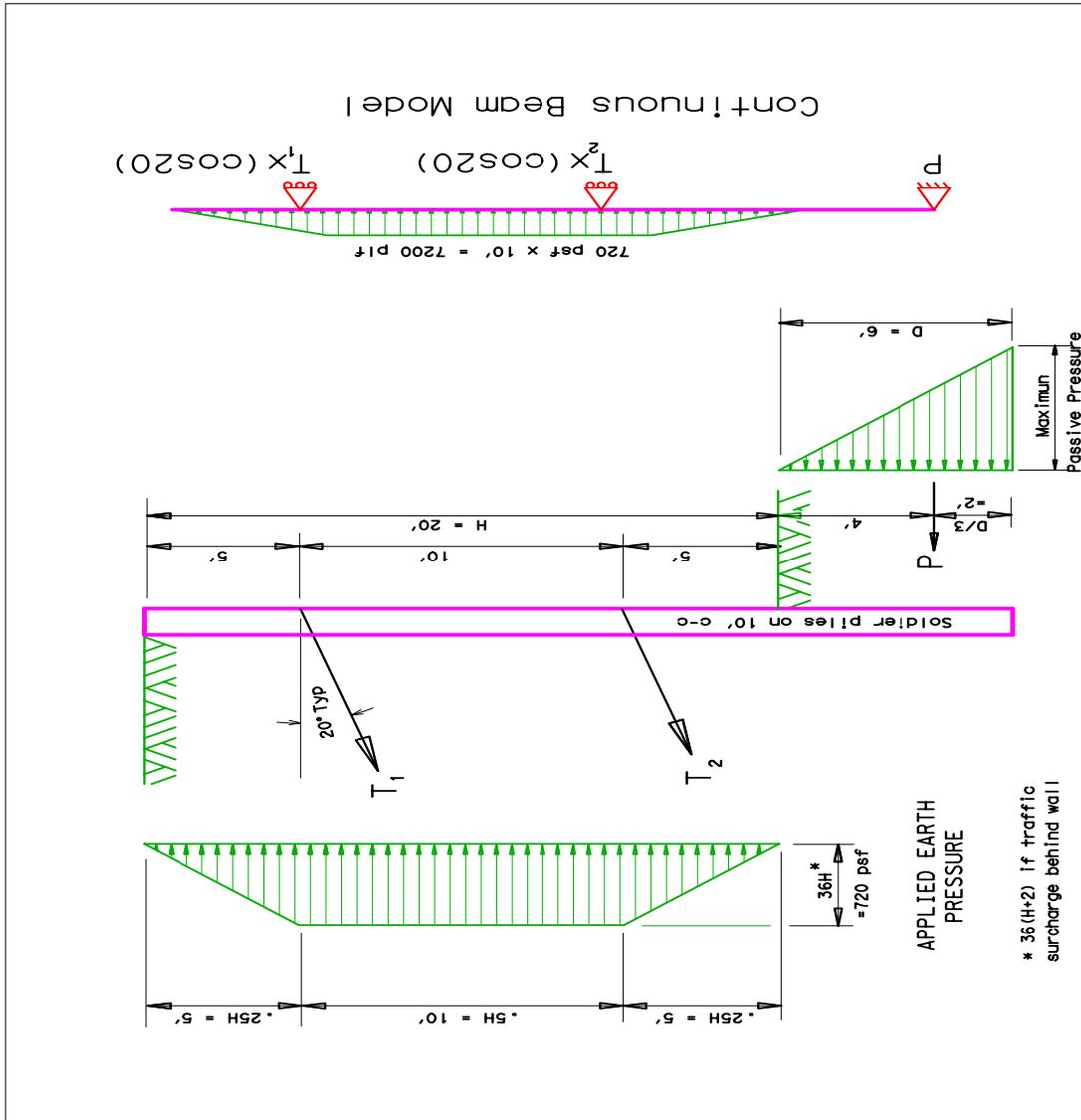


Tied-Back Wall Design Example

This design example illustrates the structural analysis for the design of a tiedback wall. The structural sizing of the members is not covered here.



Tiedback Wall Design Example - 1

TEXAS DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
 BMO0511 MOVABLE LOAD ANALYSIS OF BEAM COLUMNS - 224104 VER 4.0 APR 82

PROBLEM NO. 1 DISTRICT 15 BEAR COUNTY
 CONTROL NO. IH 410 GHO

1 20' TIEBACK WALL 10.0' PILE SPA. 36# TRAP. PRESS.

DESIGN NOTE:

Soldier pile must be designed to resist the maximum bending moments and shears. The wall fascia must be designed to resist the soil pressure exerted between the soldier piling.

TABLE 1 - PROGRAM-CONTROL DATA

ENVELOPES OF MAXIMUMS	2	3	4	5	6
HOLD FROM PRECEDING PROBLEM (1=HOLD)	0	0	0	0	0
NUM CARDS INPUT THIS PROBLEM	1	3	6	0	0

TABLE 2 - CONSTANTS

OPTION (IF=1) TO PLOT ENVELOPES OF MAXIMUMS	0	0	0	0	0
NUM INCREMENTS	6.640E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
INCREMENT LENGTH	1.440E+04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NUMBER OF INCREMENTS	2.880E+04	5.211E+04	0.000E+00	0.000E+00	0.000E+00
INITIAL POSITION	1.362E-01	-1.710E+03	-3.051E-04	0.000E+00	0.000E+00
FINAL POSITION	1.345E-01	-2.502E+04	-2.331E-04	0.000E+00	0.000E+00
M	1.095E-01	-4.113E+04	-1.611E-04	0.000E+00	0.000E+00
8	8.000E+00	3.802E-01	6.836E-02	-4.113E+04	-8.910E-03
9	9.000E+00	4.486E-01	1.832E-02	-5.004E+04	-1.710E-03
10	1.000E-01	4.669E-01	-3.343E-02	-4.626E+04	5.490E-03
11	1.100E-01	4.334E-01	-7.970E-02	-3.357E+04	1.269E-04
12	1.200E-01	3.537E-01	-1.133E-01	-1.368E+04	1.989E-04
13	1.300E-01	2.405E-01	-1.269E-01	1.341E+04	2.709E-04
14	1.400E-01	1.135E-01	-1.135E-01	4.770E+04	3.429E-04
15	1.500E-01	0.000E+00	-6.584E-02	3.120E+04	-1.650E+04
16	1.600E-01	-6.584E-02	-3.464E-02	2.046E+04	-1.074E+04
17	1.700E-01	-1.005E-01	-1.418E-02	1.404E+04	-6.420E+03
18	1.800E-01	-1.147E-01	-1.399E-04	1.050E+04	-3.540E+03
19	1.900E-01	-1.148E-01	1.036E-02	8.400E+03	-2.100E+03
20	2.000E-01	-1.044E-01	1.876E-02	6.300E+03	-2.100E+03
21	2.100E-01	-8.568E-02	2.506E-02	4.200E+03	-2.100E+03
22	2.200E-01	-6.062E-02	2.926E-02	2.100E+03	-2.100E+03
23	2.300E-01	-3.136E-02	3.136E-02	0.000E+00	-2.100E+03
24	2.400E-01	0.000E+00	3.136E-02	0.000E+00	2.100E+03
25	2.500E-01	3.136E-02	0.000E+00	0.000E+00	0.000E+00

$T_1 = 52.11 / \cos 20 = 55 \text{ k}$

$M_{max} = 51.8 \text{ ft-k}$

$T_2 = 57.991 / \cos 20 = 62 \text{ k}$

$P = 2.1 \text{ k}$ Maximum Passive Pressure = $2XP/D = 700 \text{ psf}$ OK