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ELASTIC WAVE PROPAGATION IN EMBANKMENT DAMS

APPENDIX B

Time-displacement graphs and stress distributions.

M.D. LINTON

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May 1982.



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Fig. B.1. Finite element grid

Fig. B.2. Layering of model D2

Fig. B.3. Finite element grid : Embankment Section

Fig. B.4. Stress distribution due to body forces for model D1

Fig. B.5. Stress distribution due to body forces for model D1 with hydrostatic
pressure on left hand side

Fig. B.6. Stress distribution due to body forces for model D2

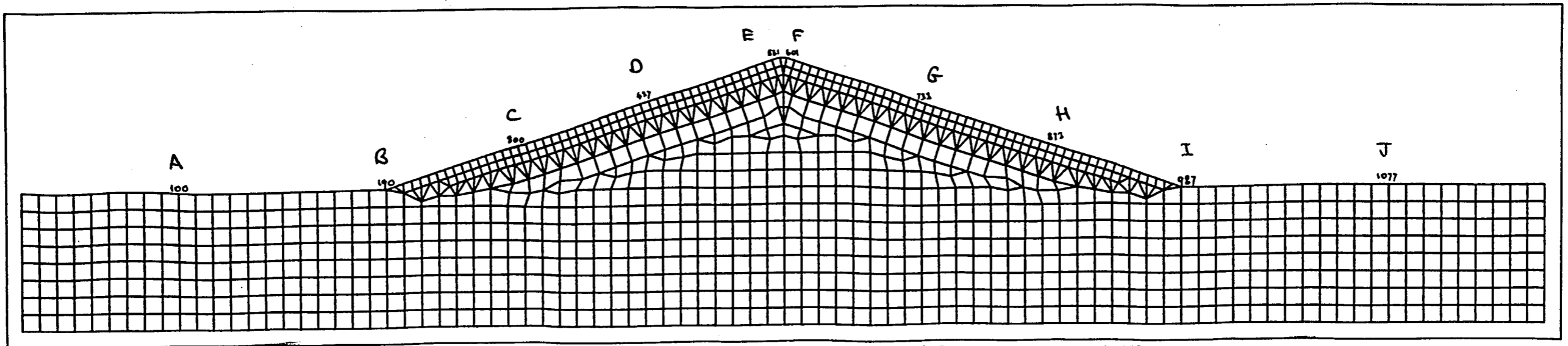


Fig. B.1. Finite element grid

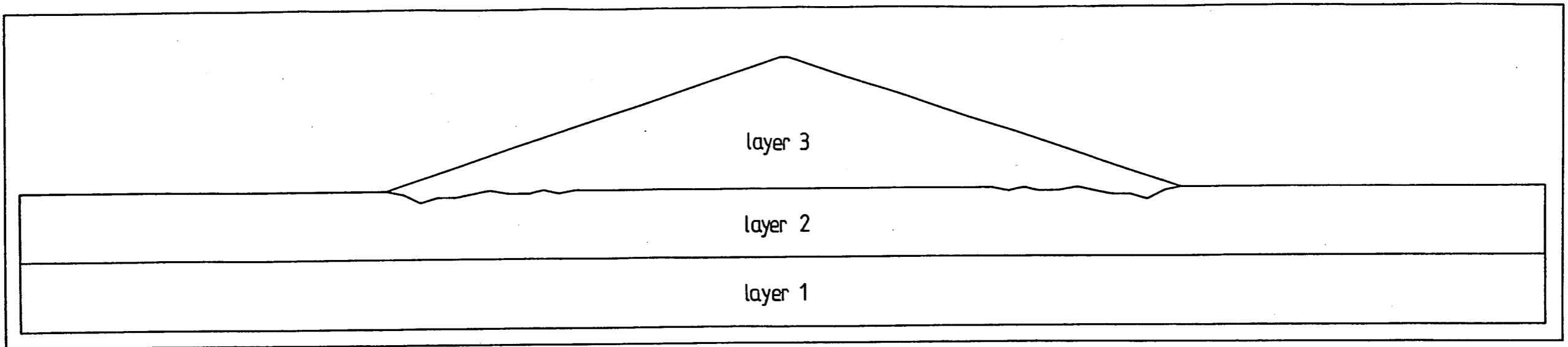


Fig. B.2. Layering of model D2

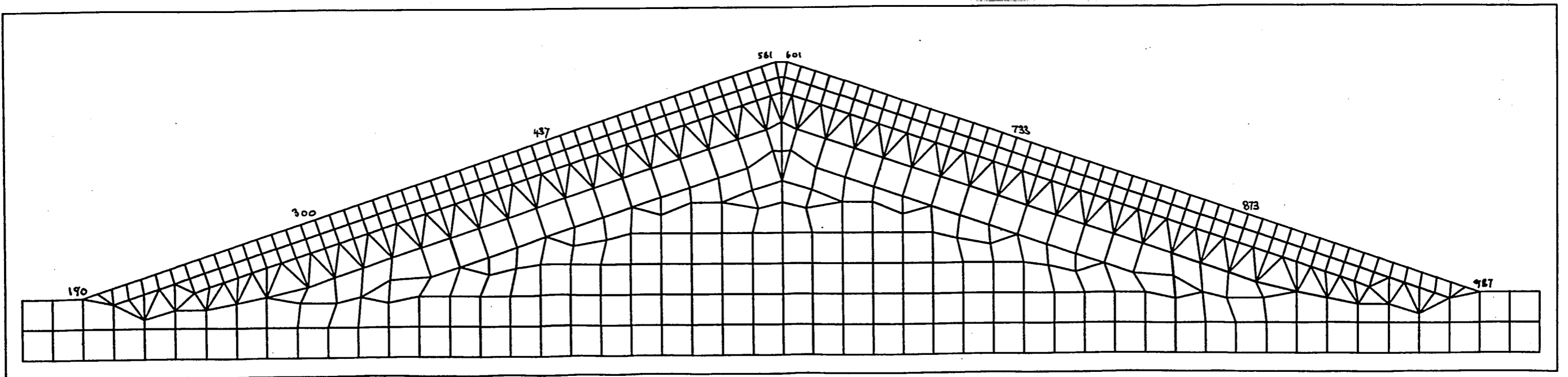


Fig. B.3. Finite element grid : Embankment Section

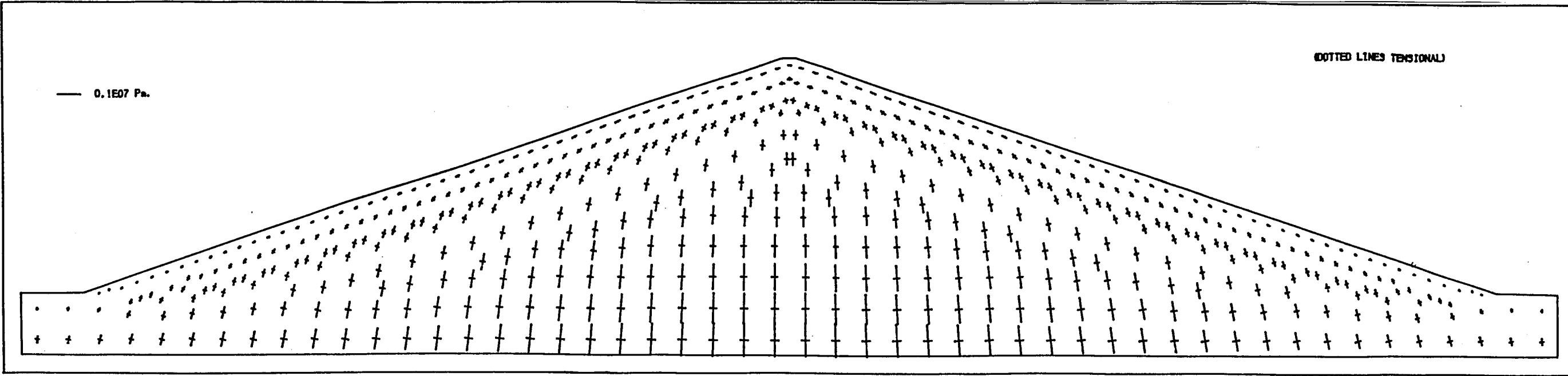


Fig B.4

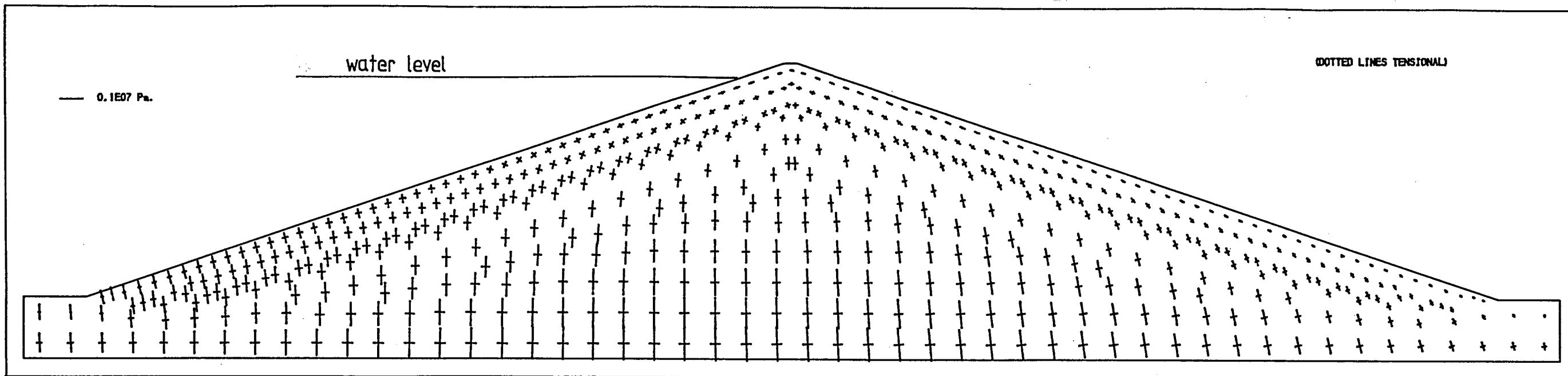


Fig B.5

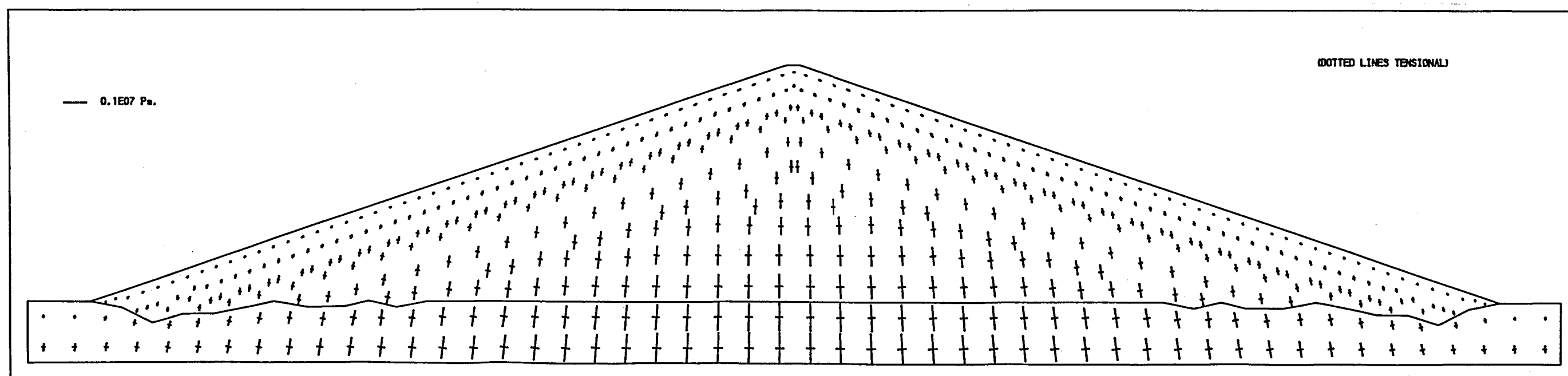


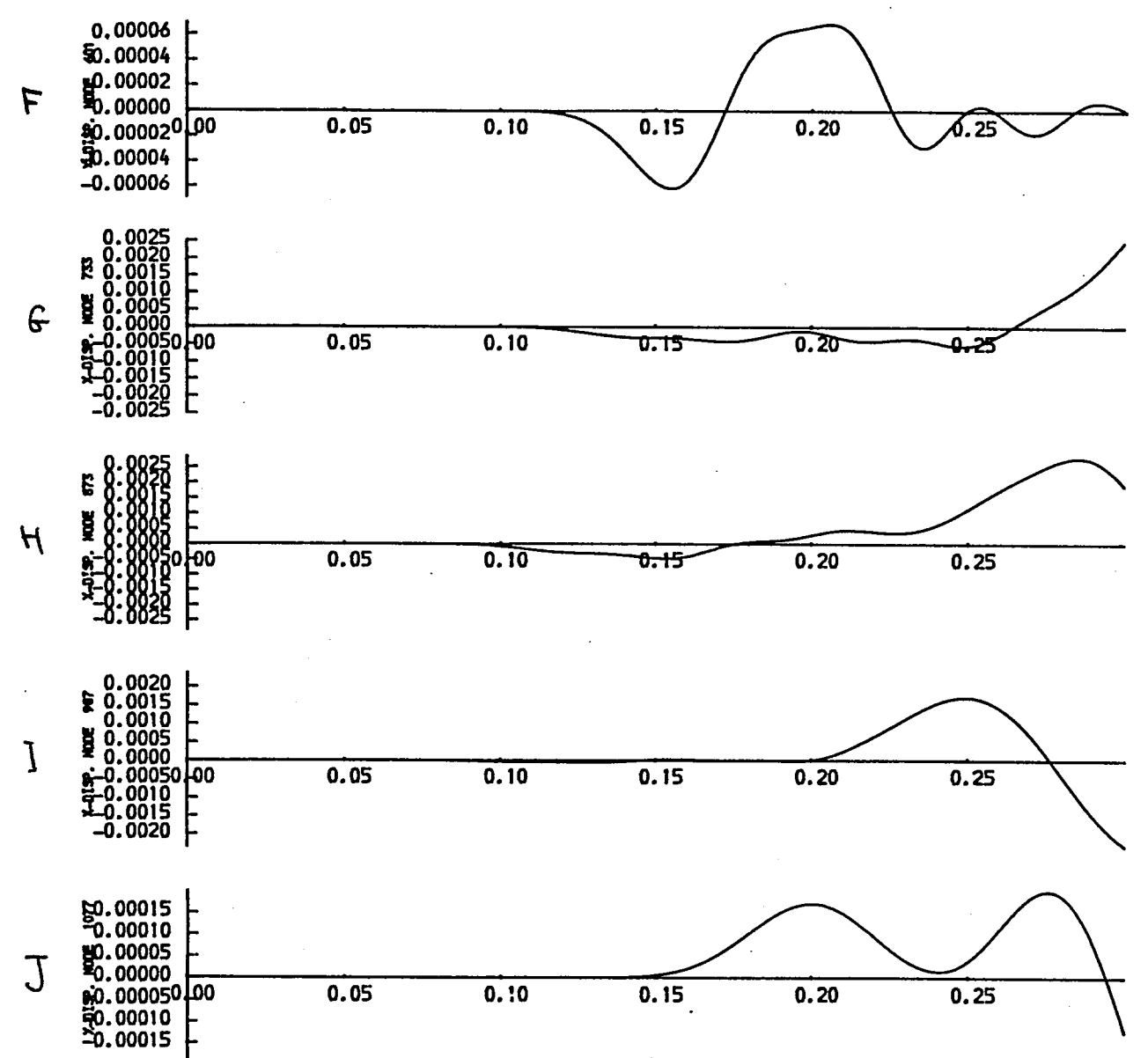
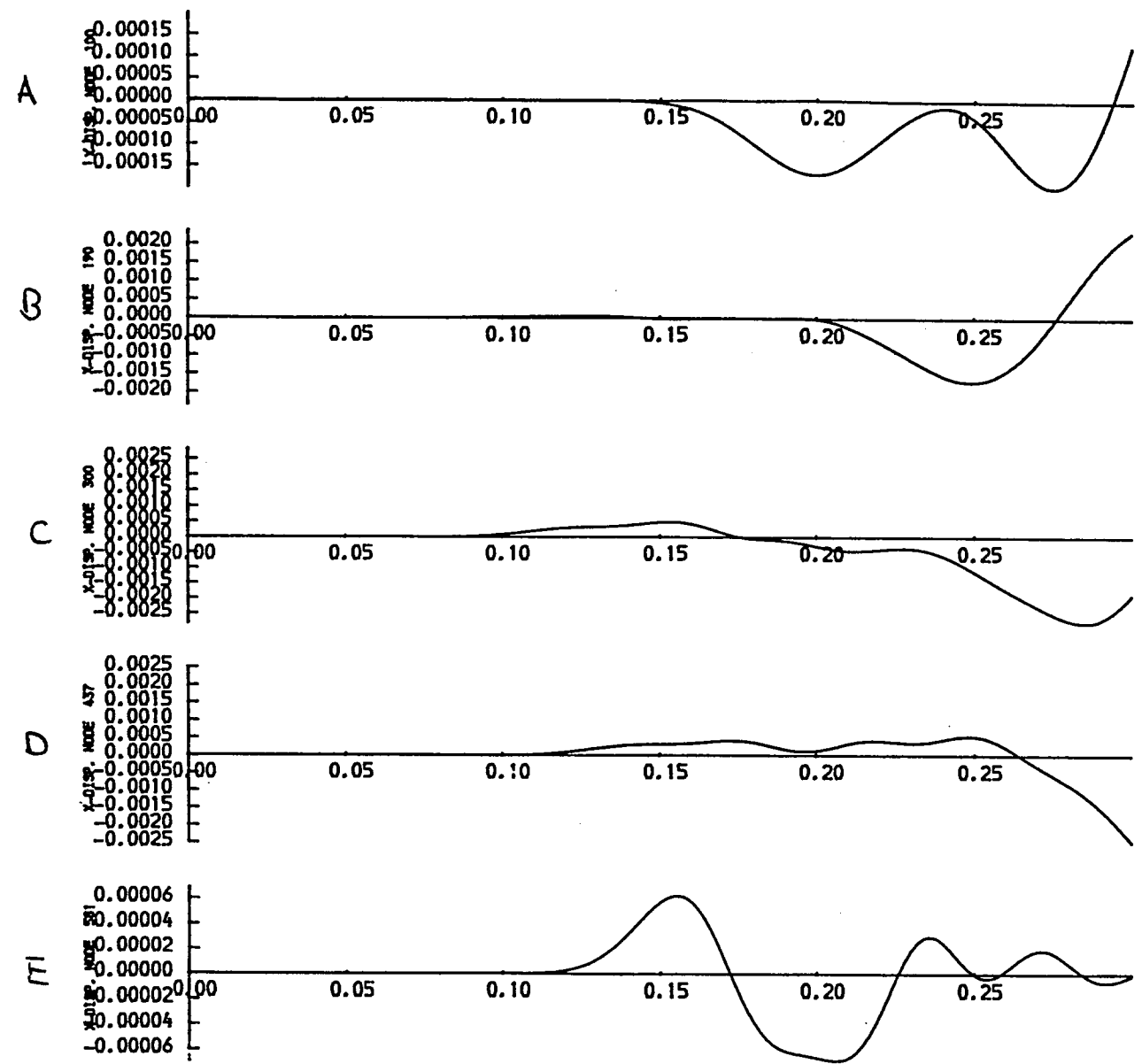
Fig B.6

Time-displacement graphs and stress distributions for Dl / l

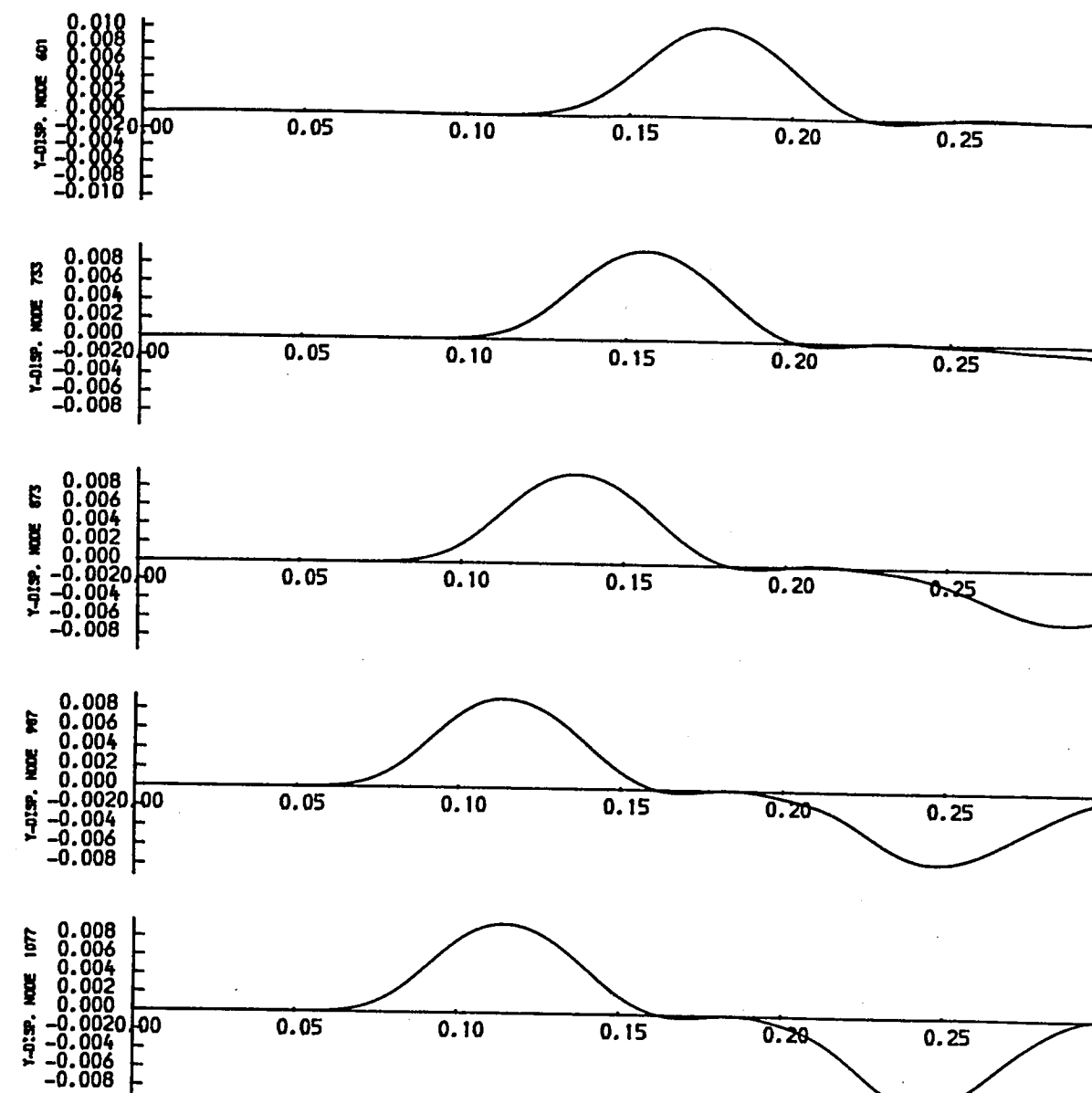
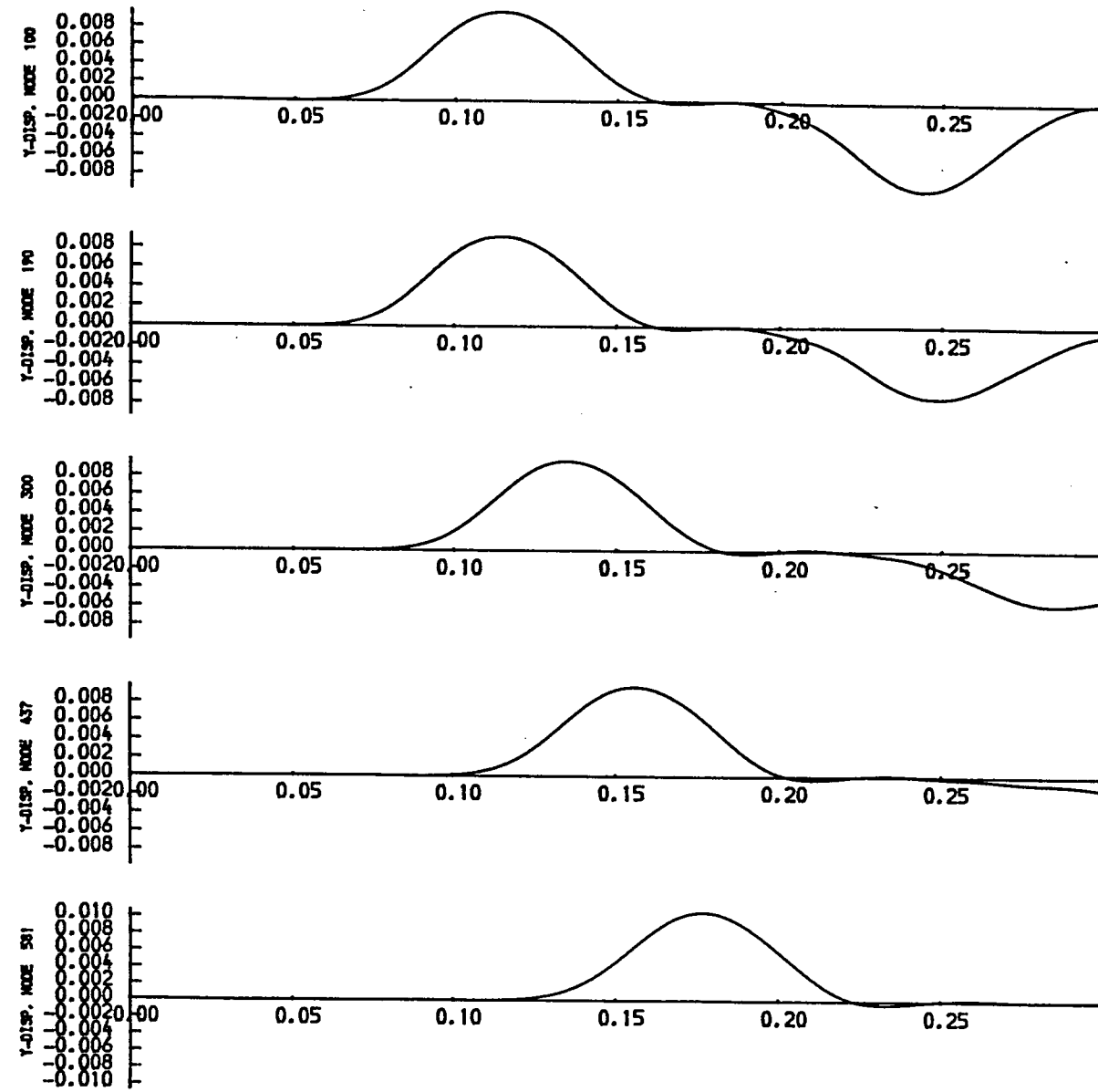
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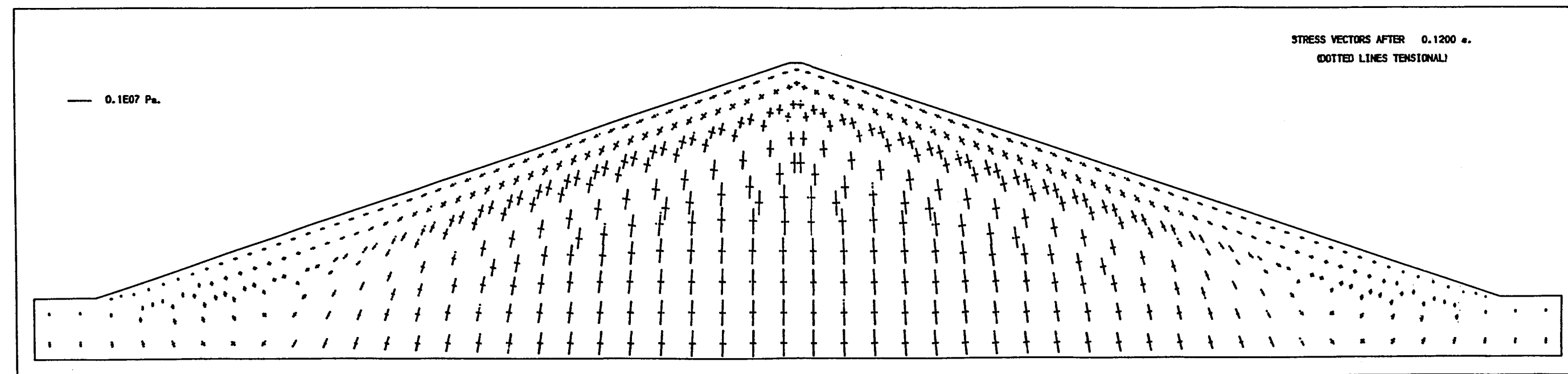
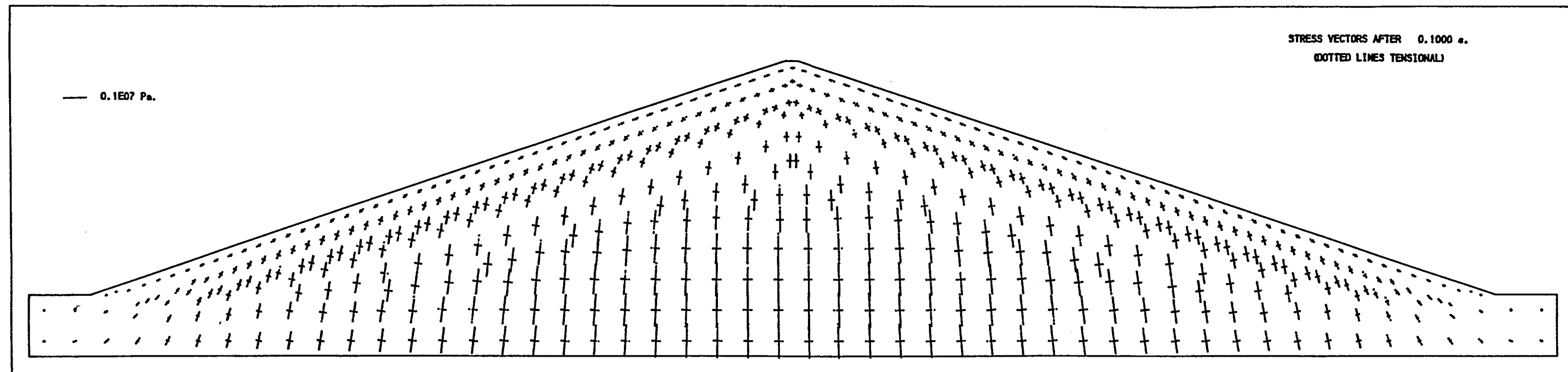
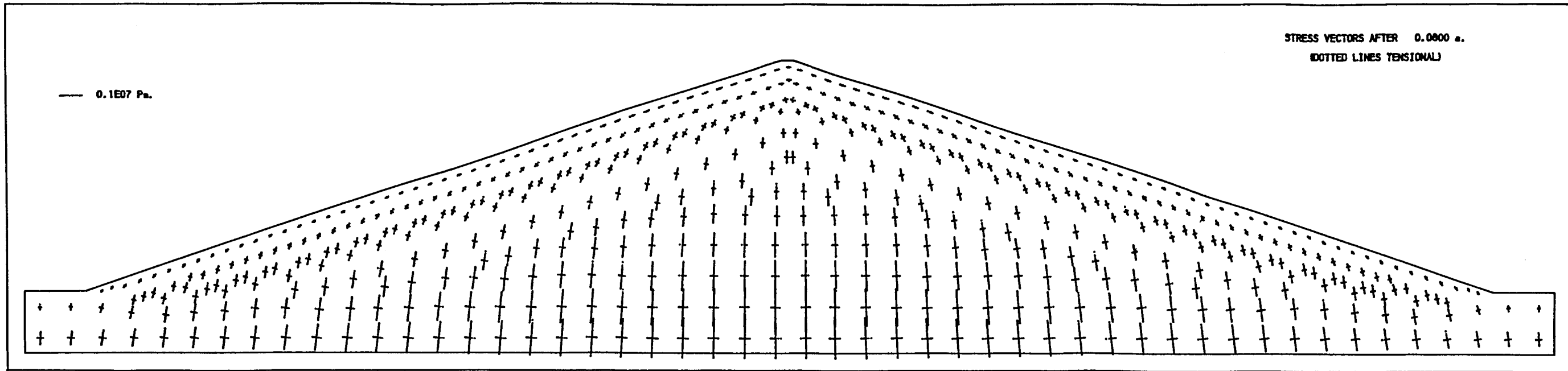
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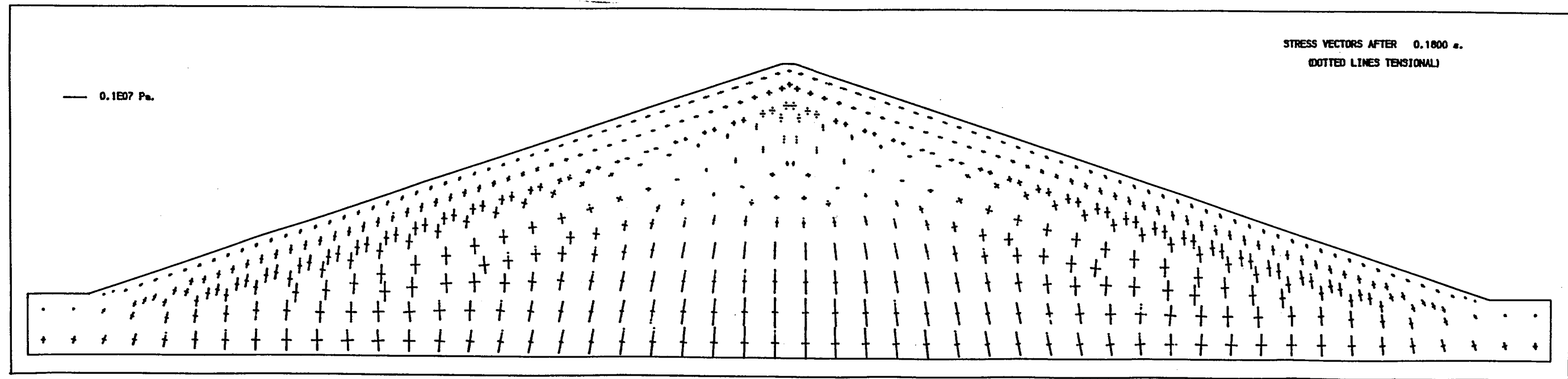
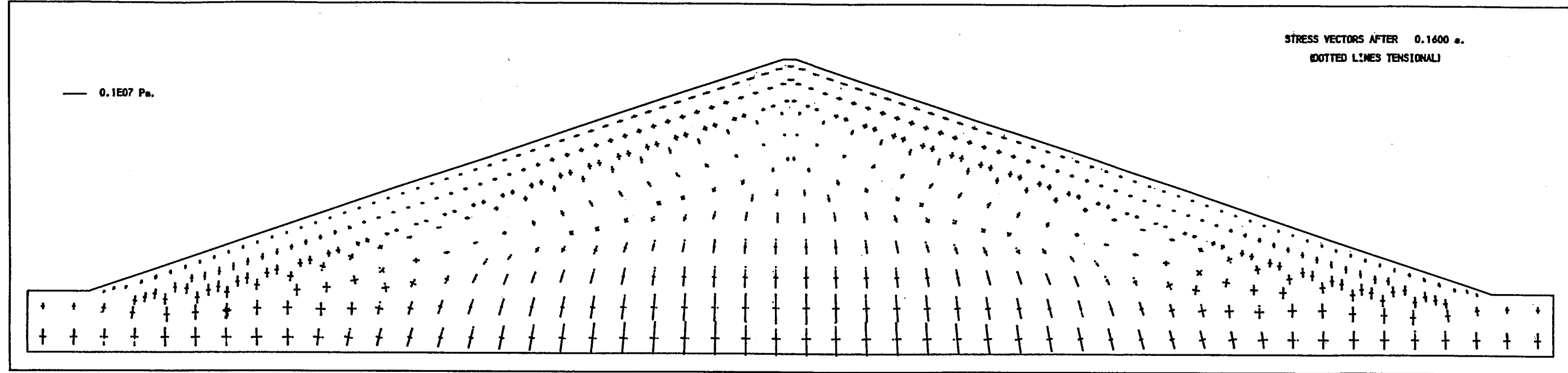
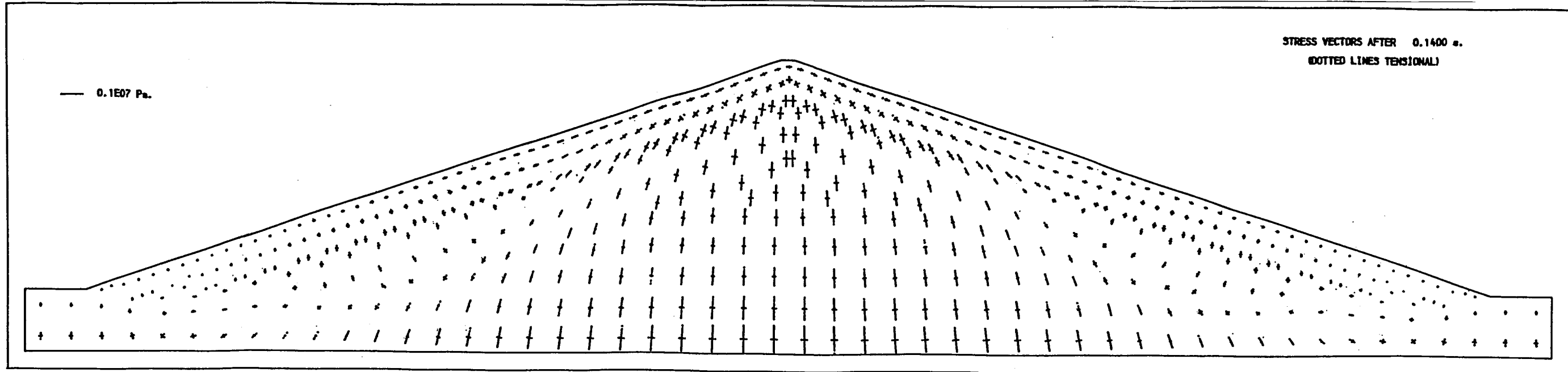
Base acceleration g

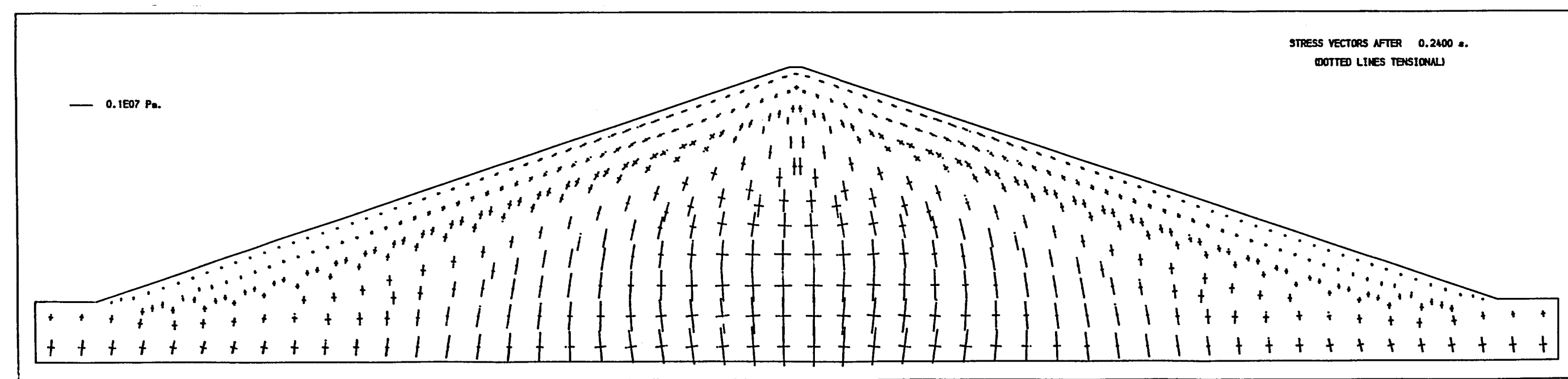
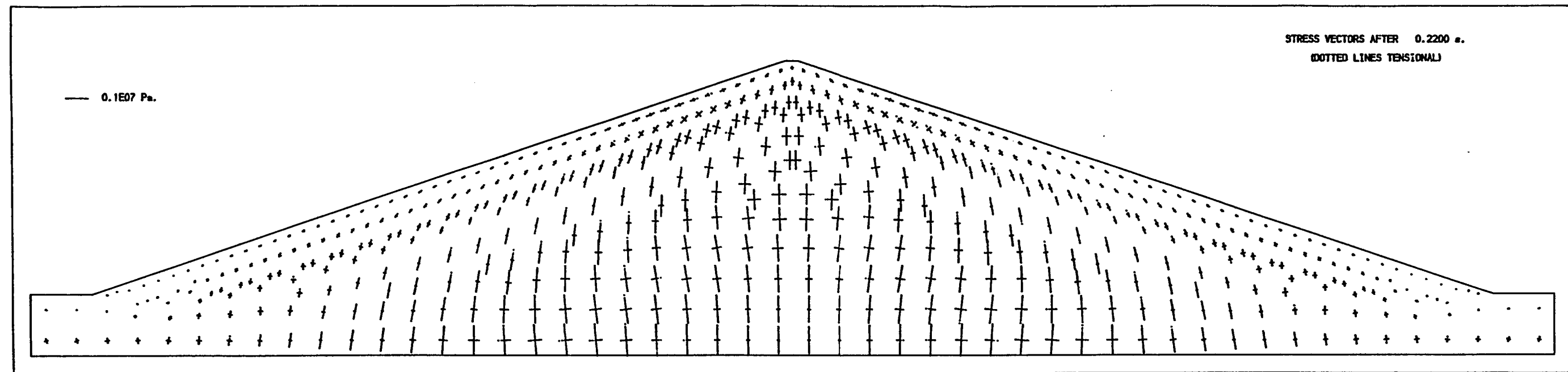
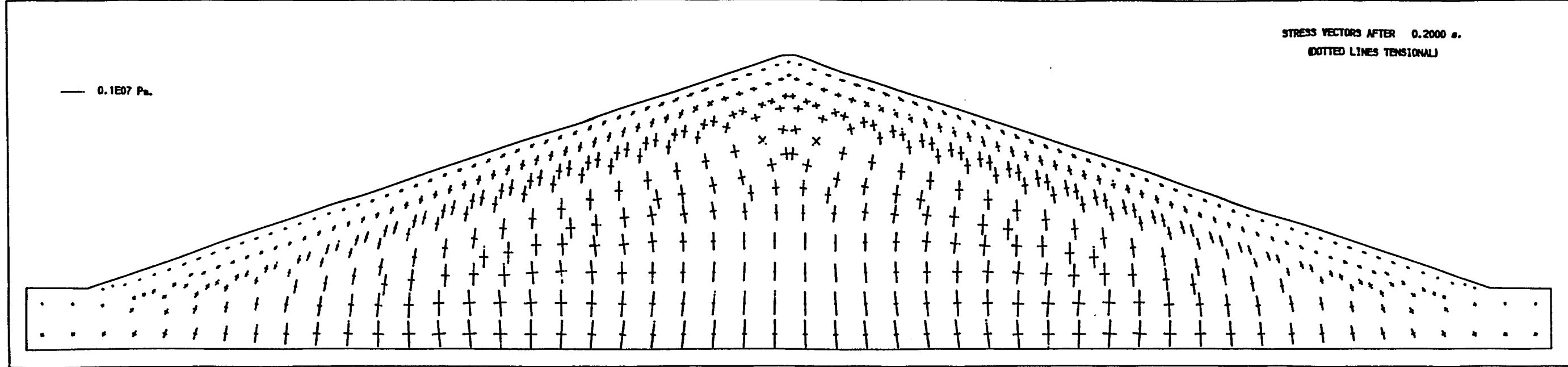


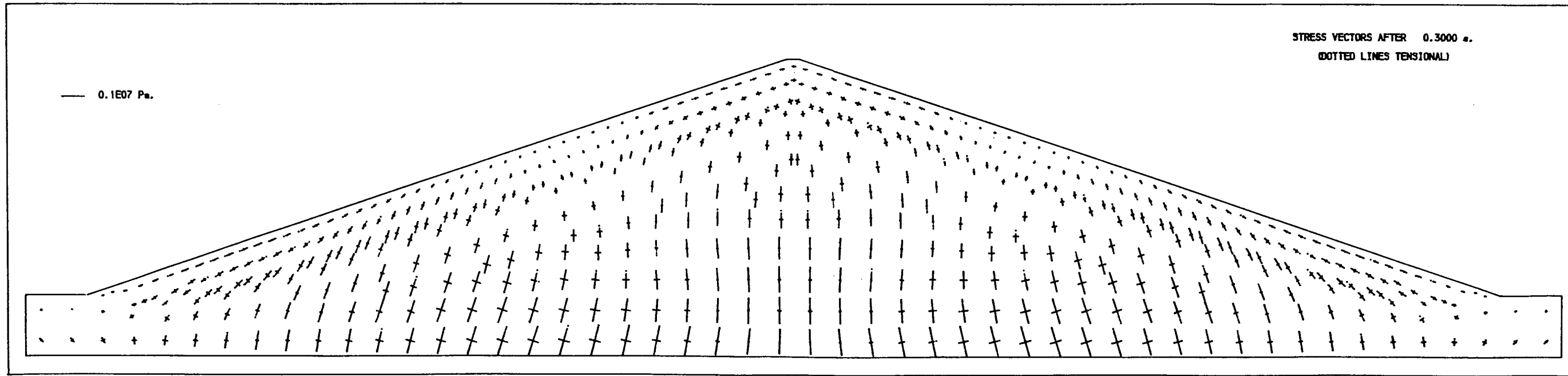
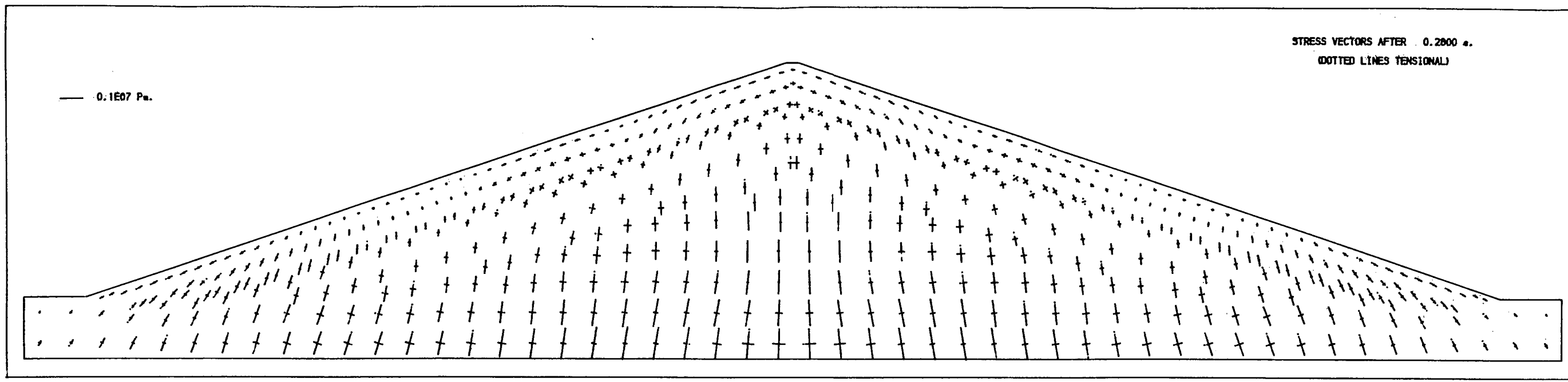
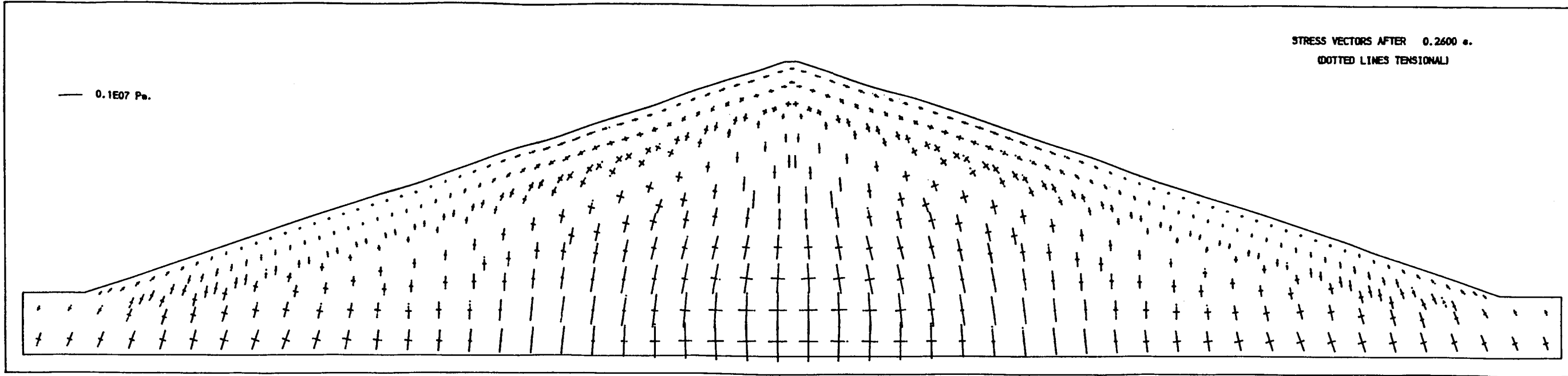
Note. For this and all other time-displacement graphs the displacements are for nodes along the top surface of the embankment. They are the numbered nodes of Fig B.1 and Fig B.3, and for clarity are labelled A to J on this page and on Fig B.1. For each model x-displacements are given first, followed by y-displacements for the same nodes.









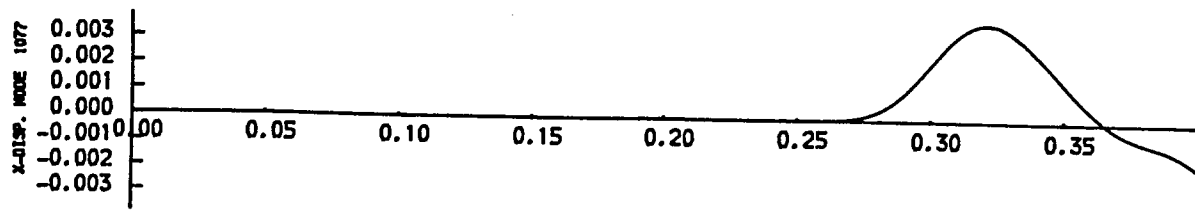
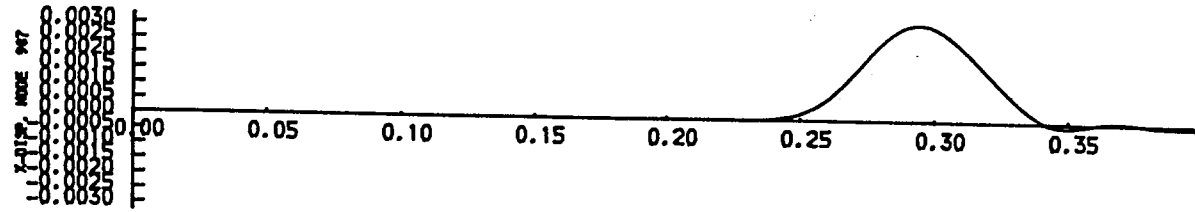
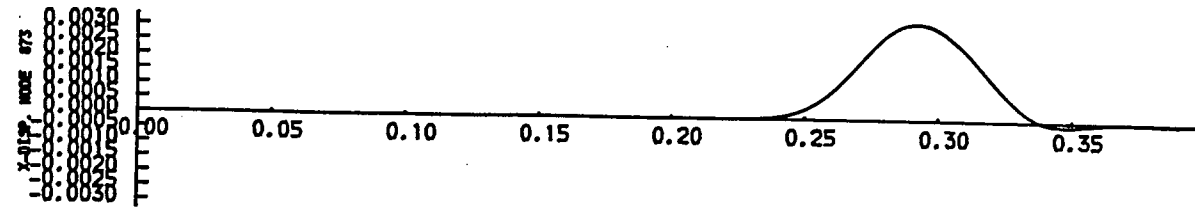
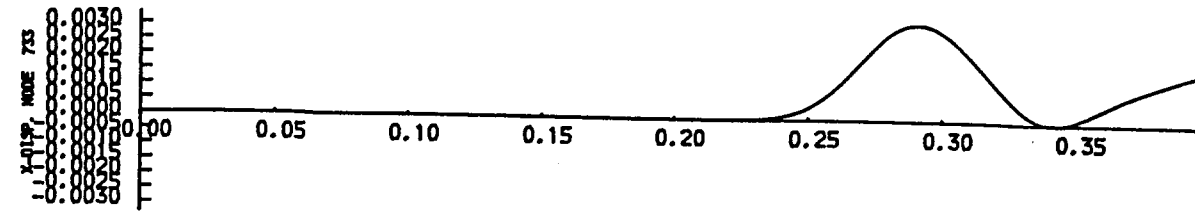
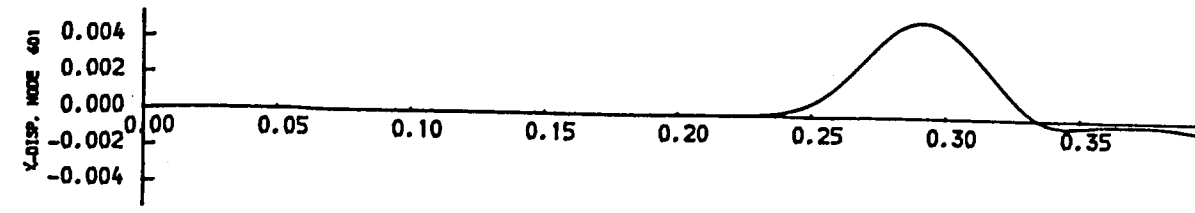
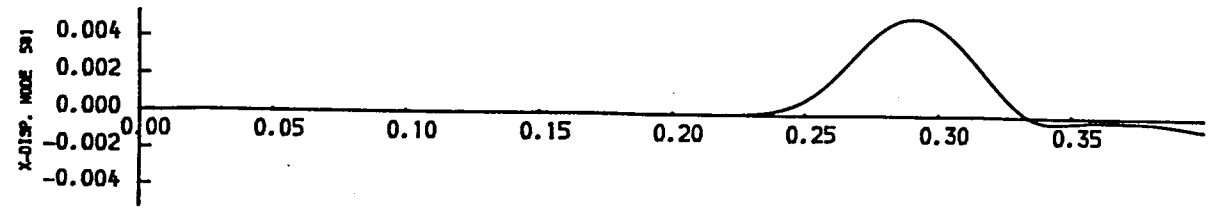
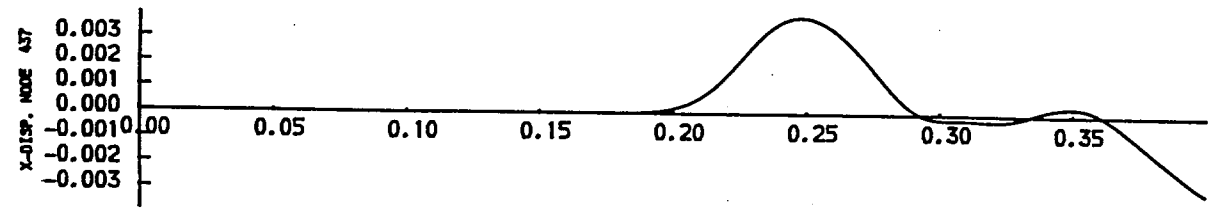
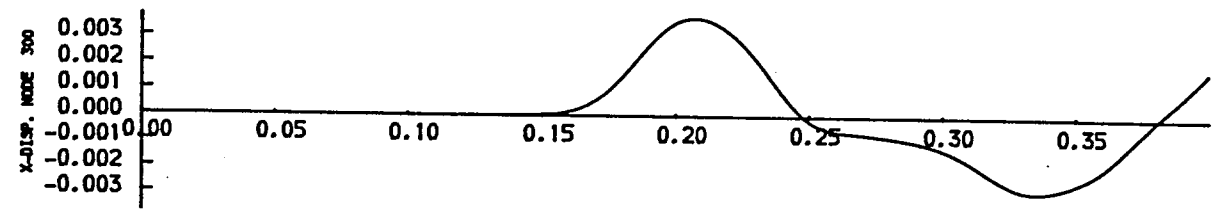
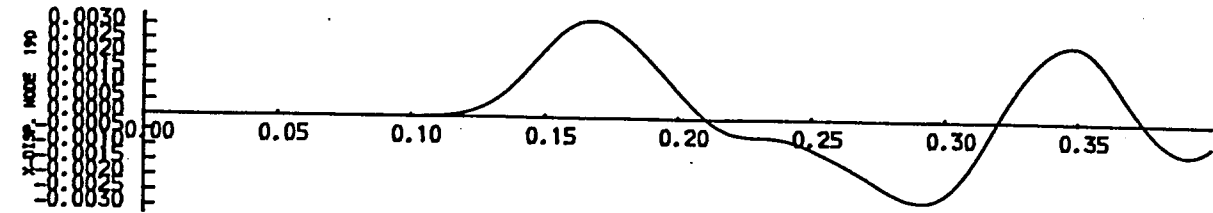
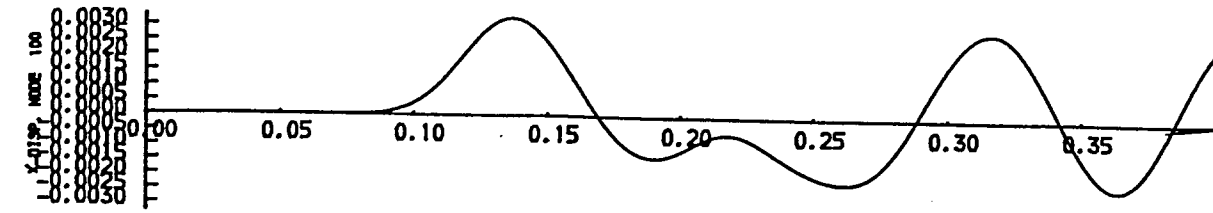


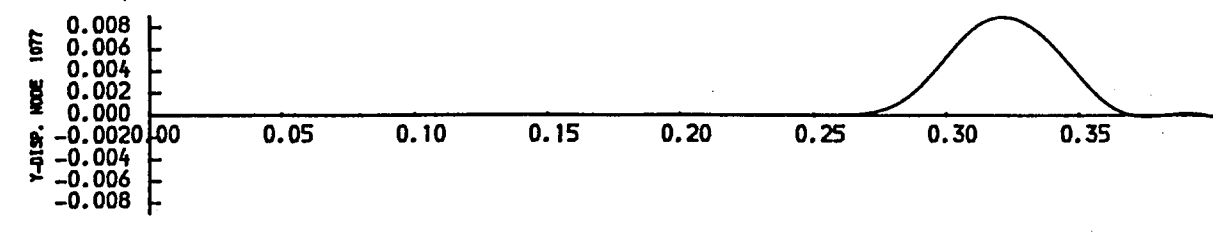
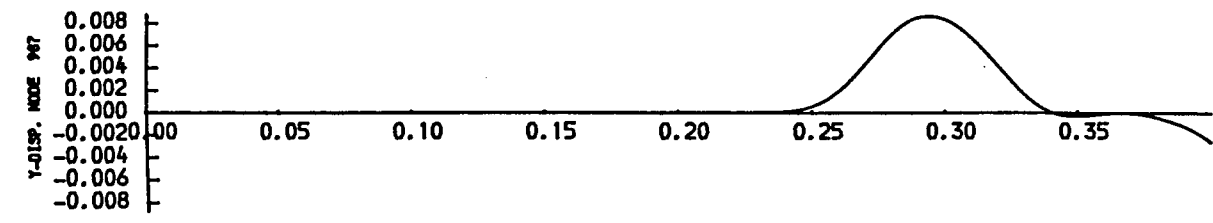
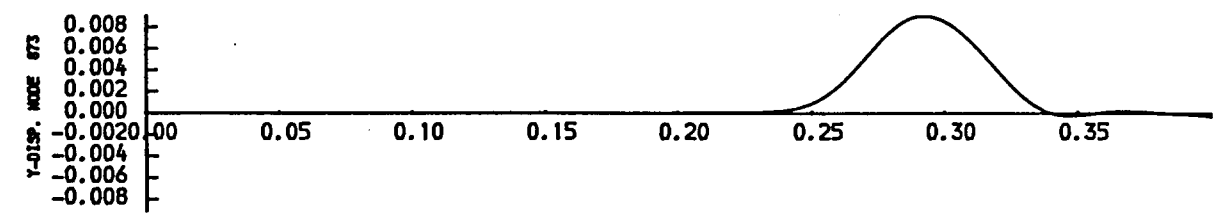
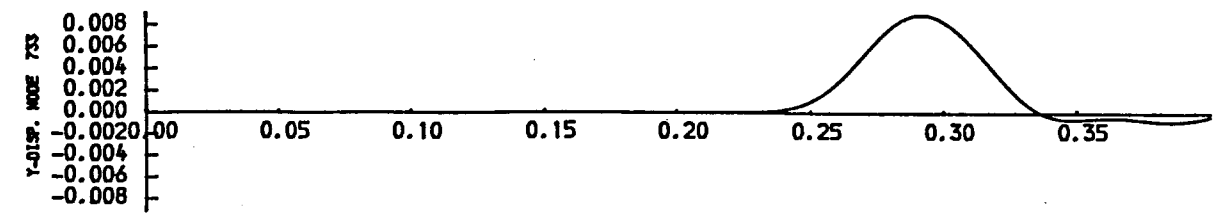
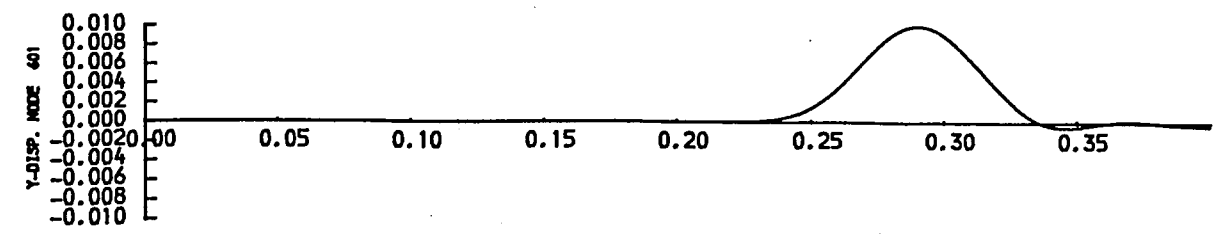
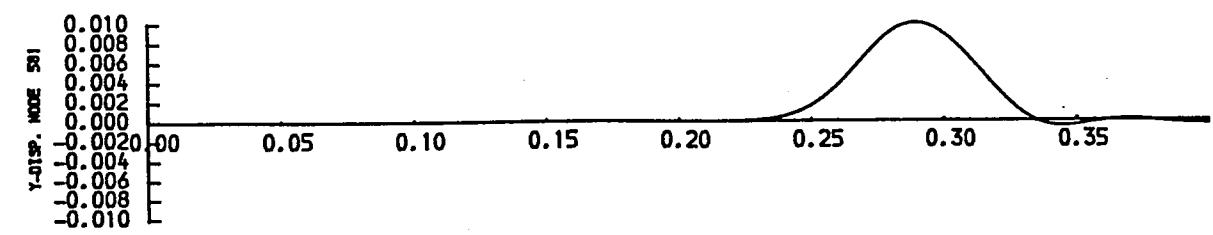
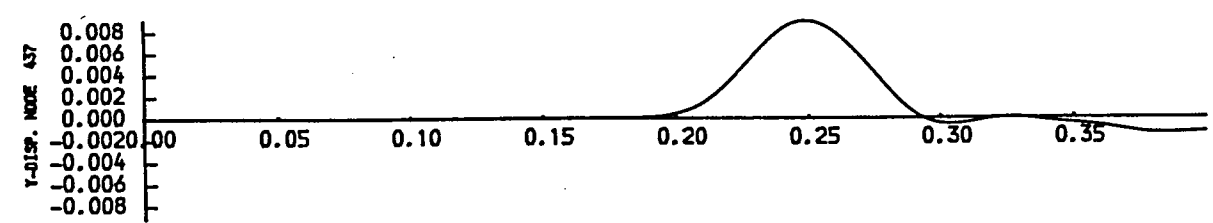
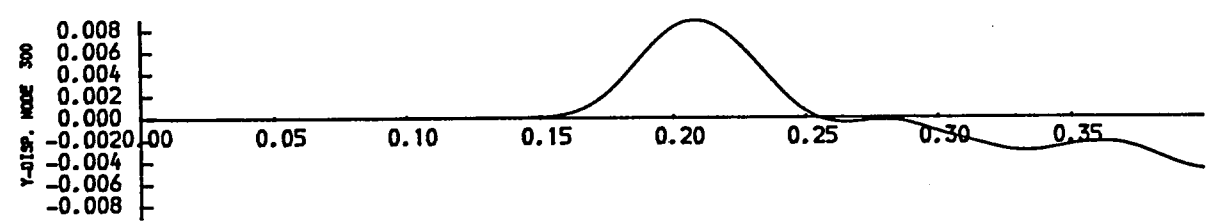
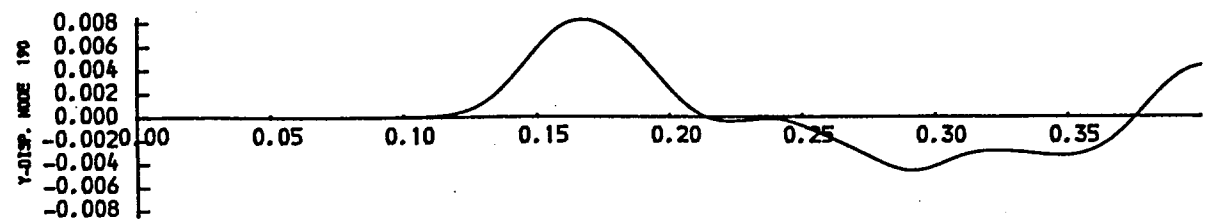
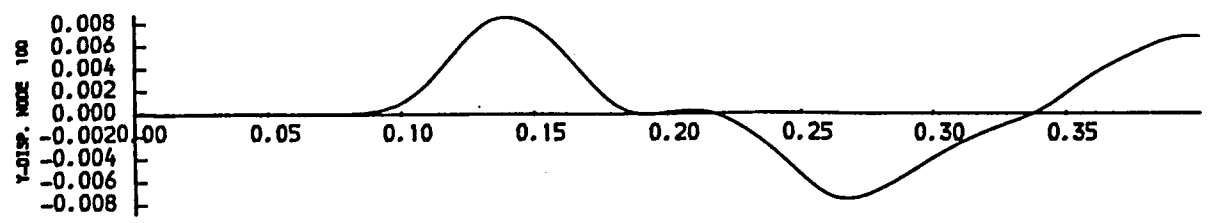
Time-displacement graphs and stress distributions for D1/2

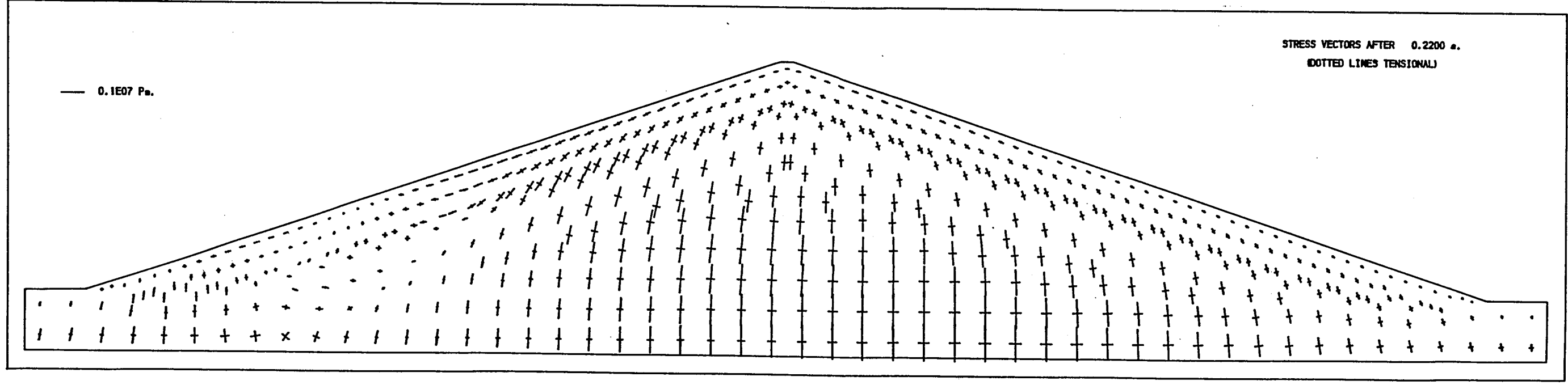
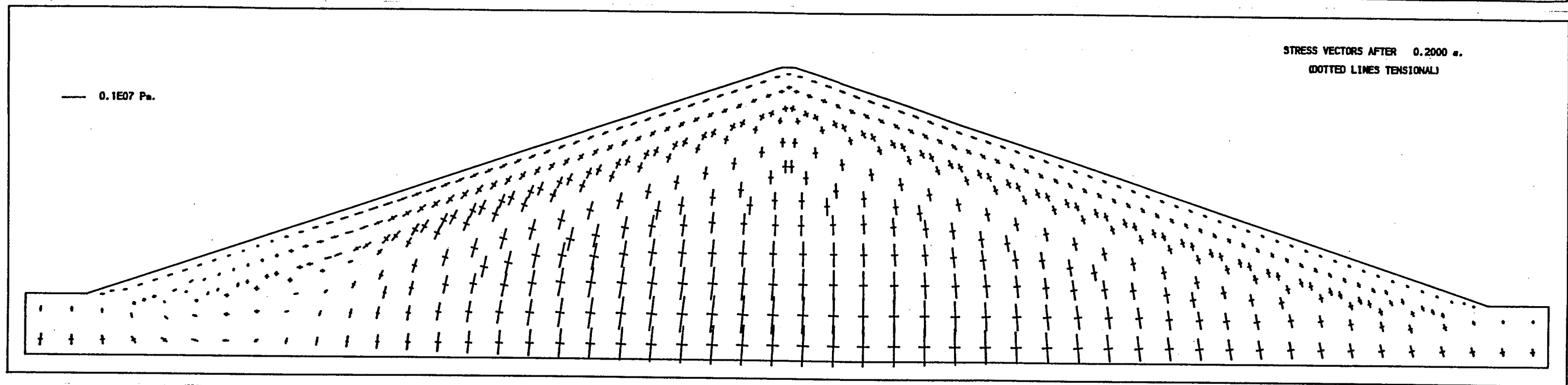
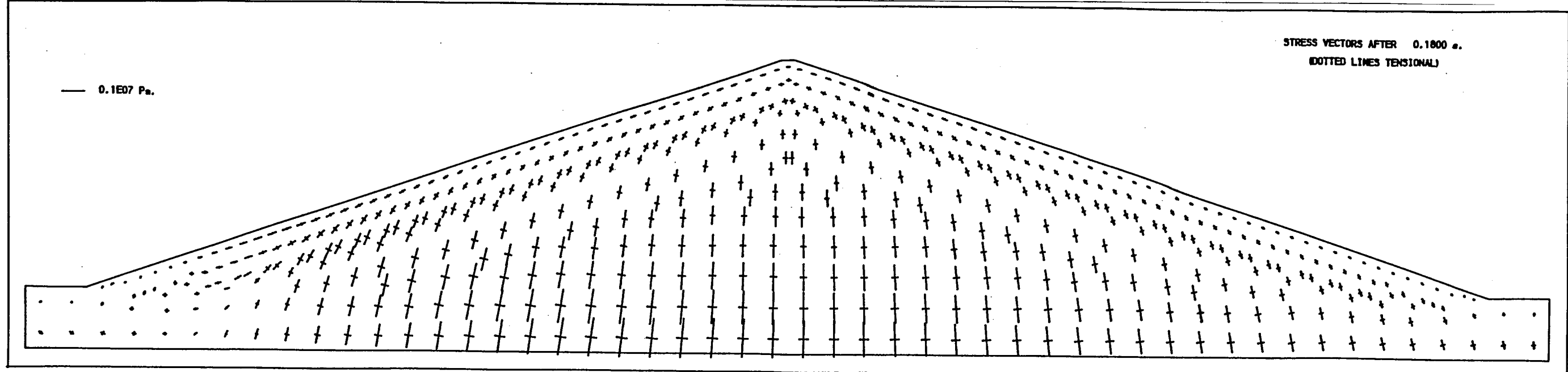
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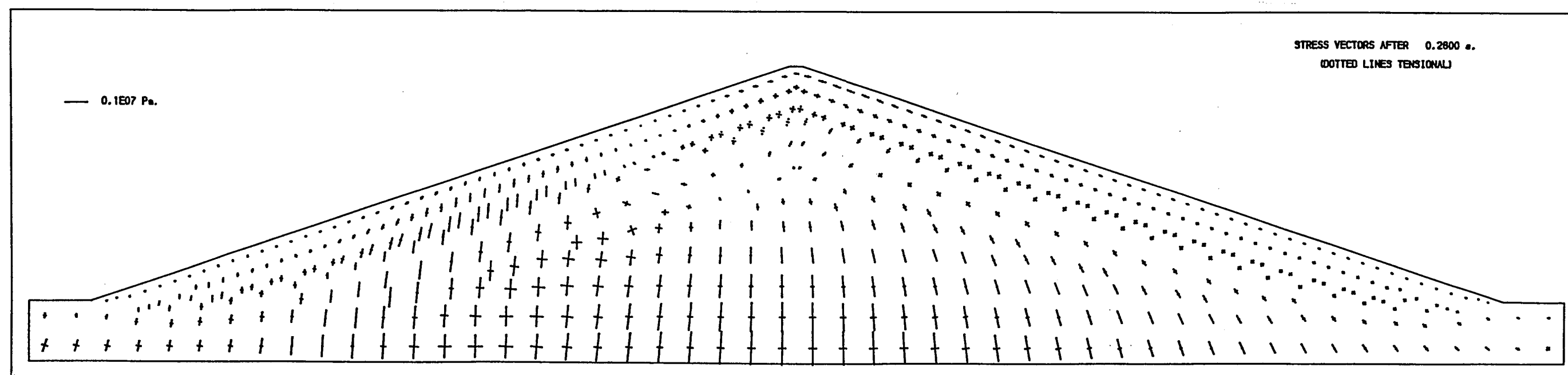
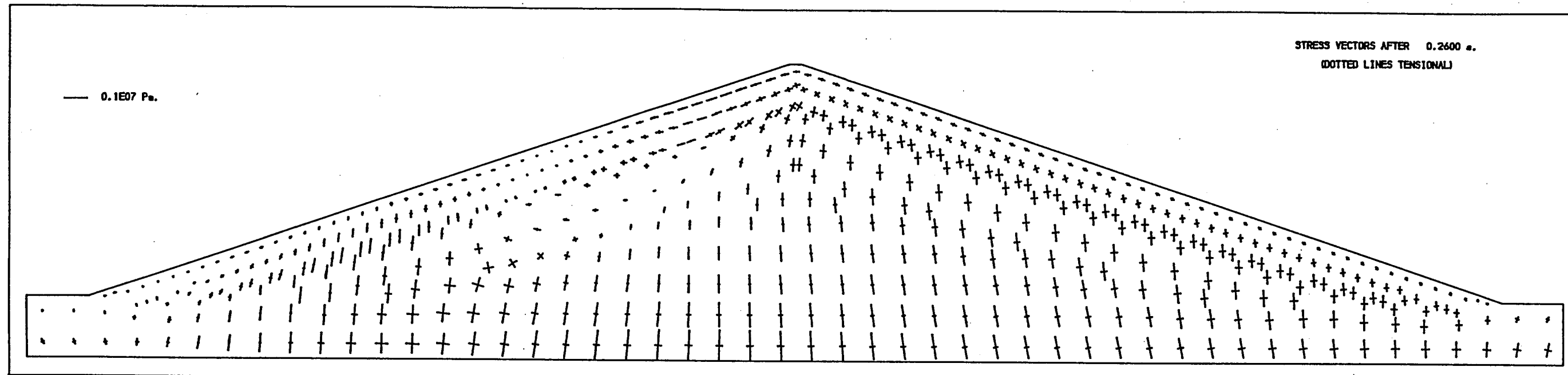
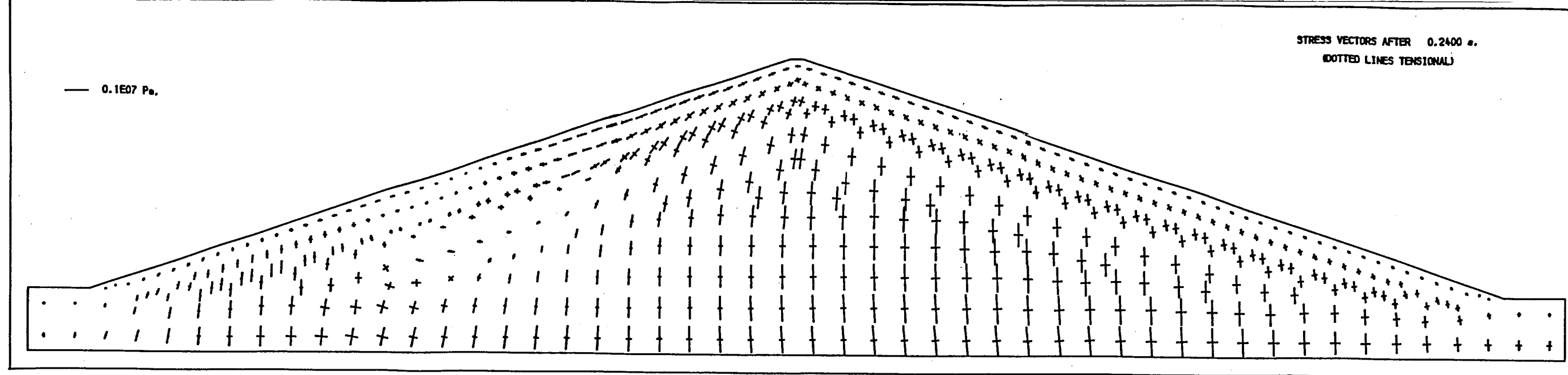
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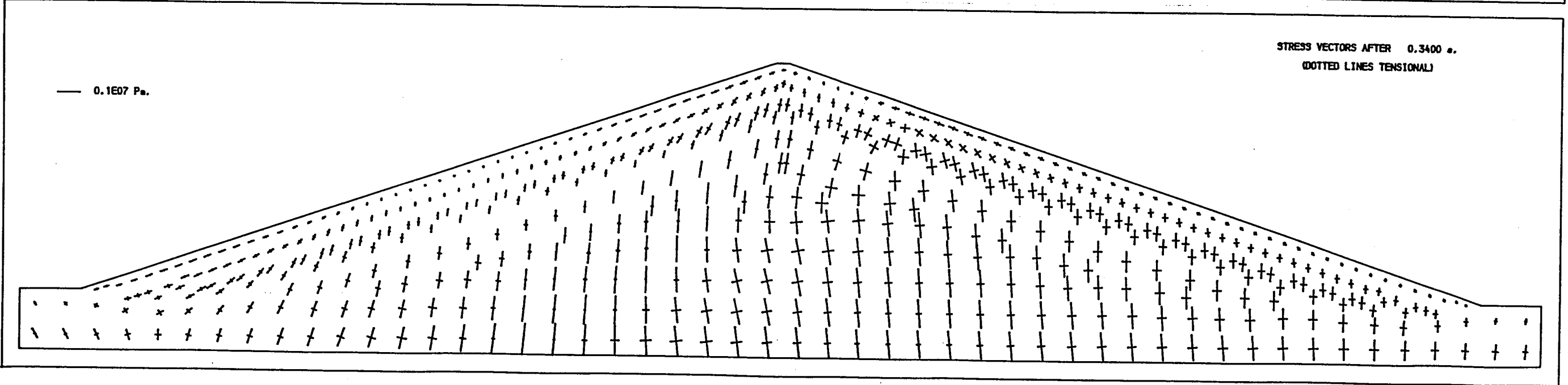
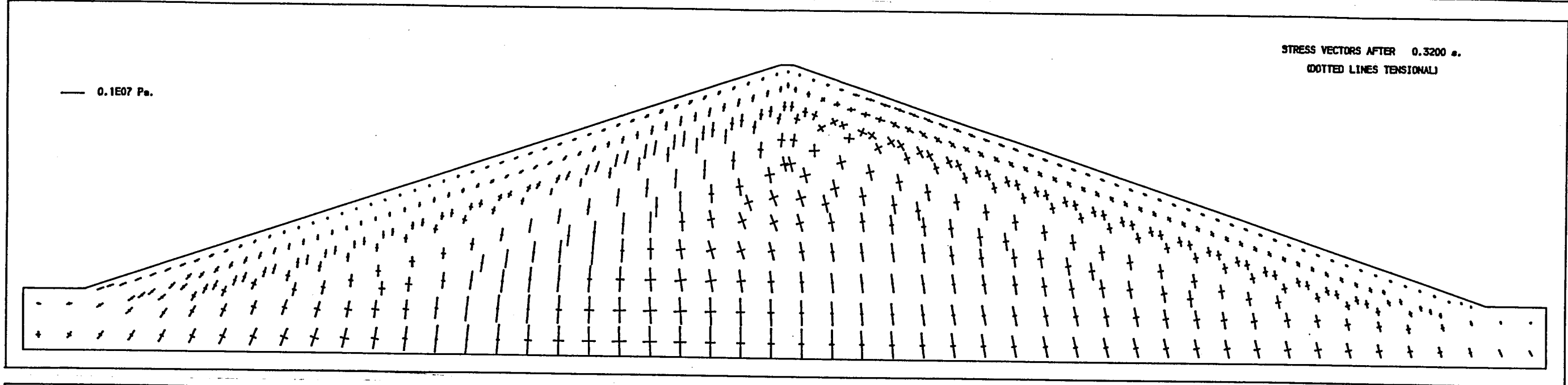
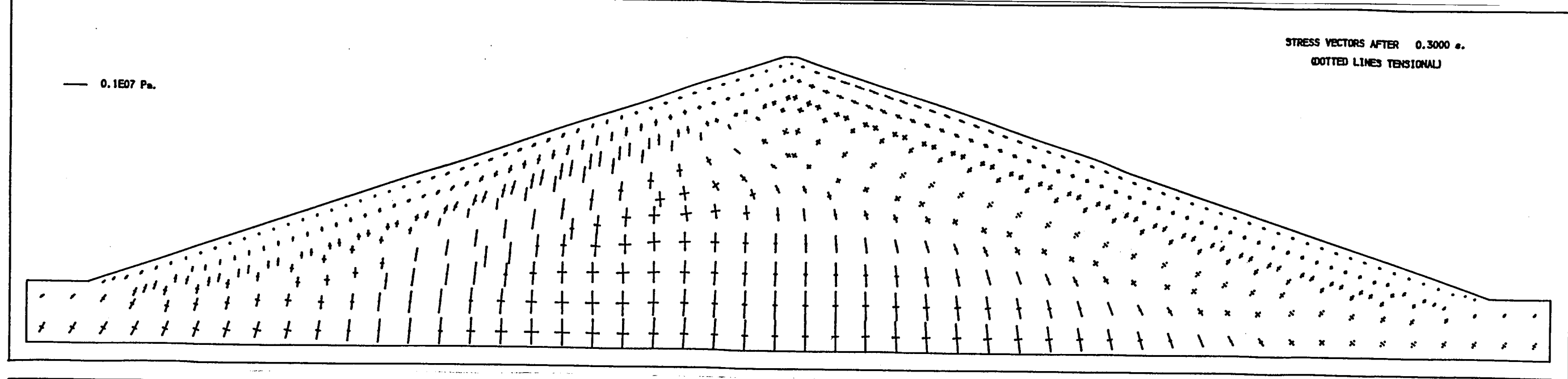
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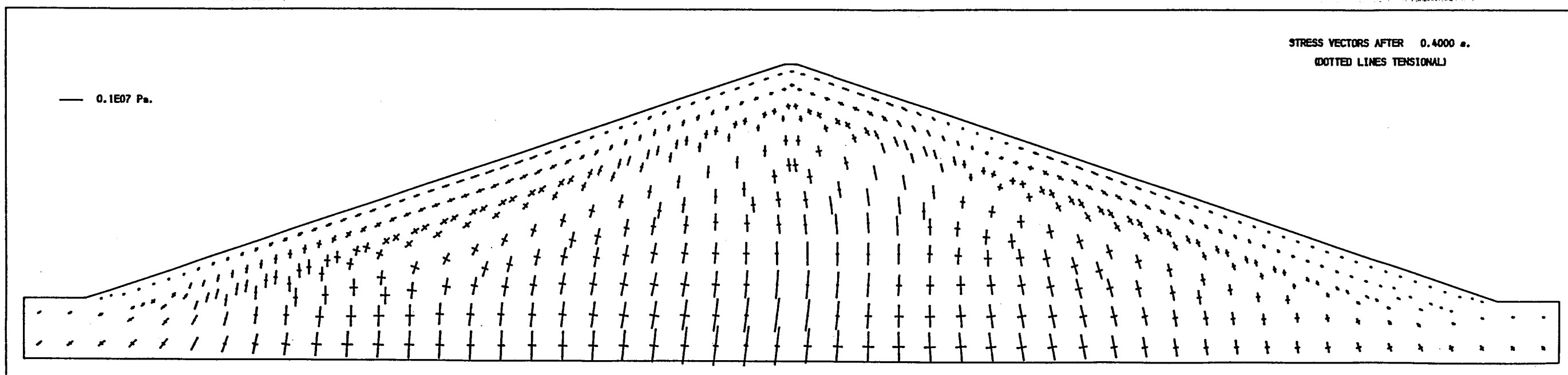
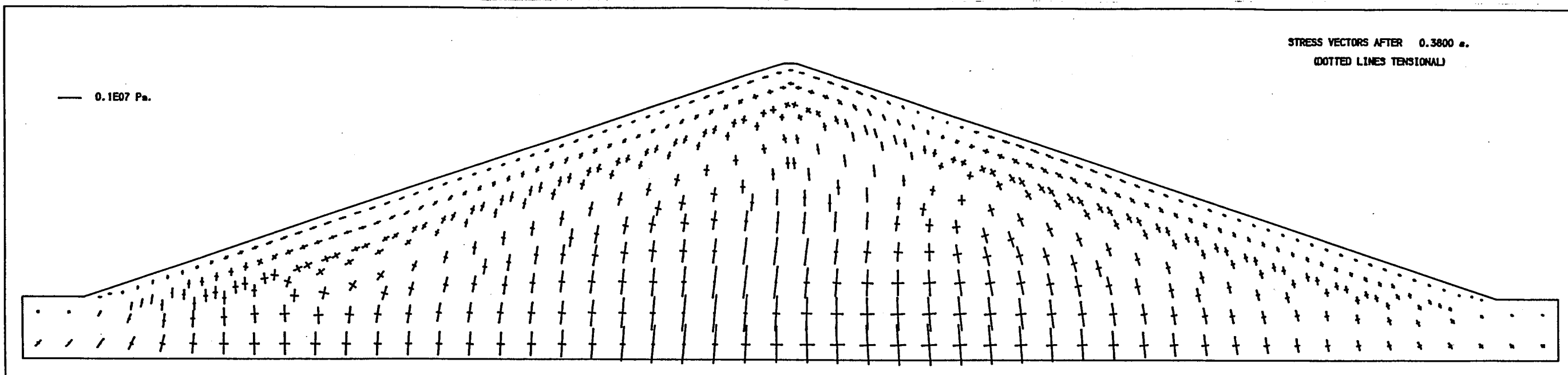
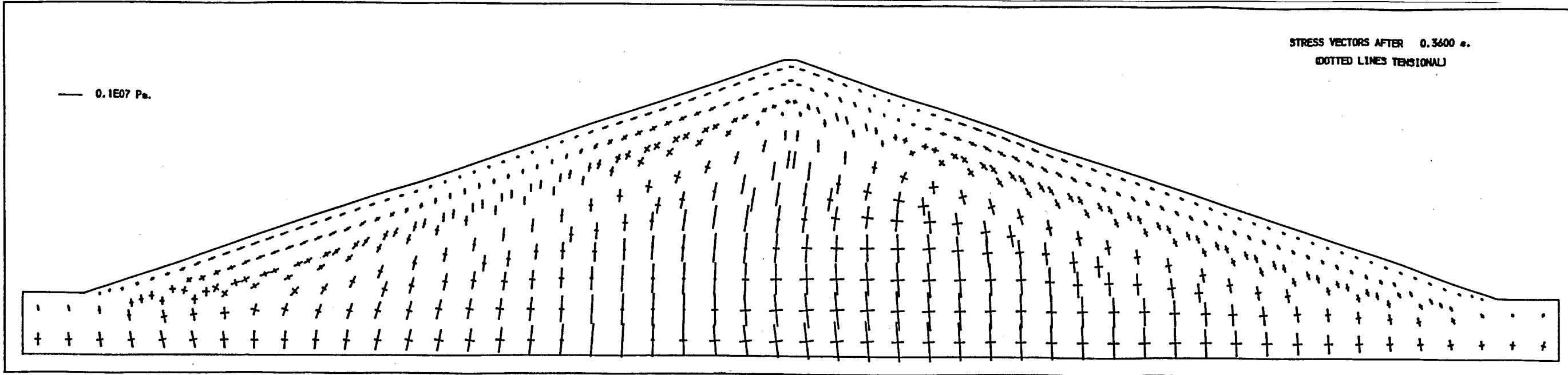










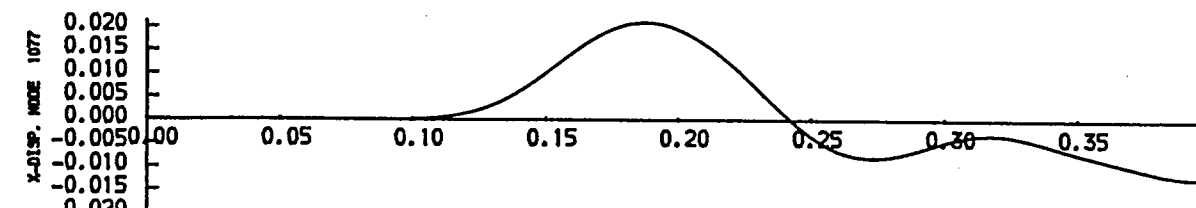
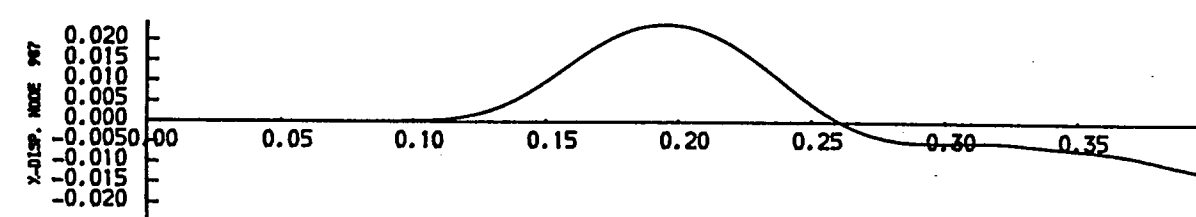
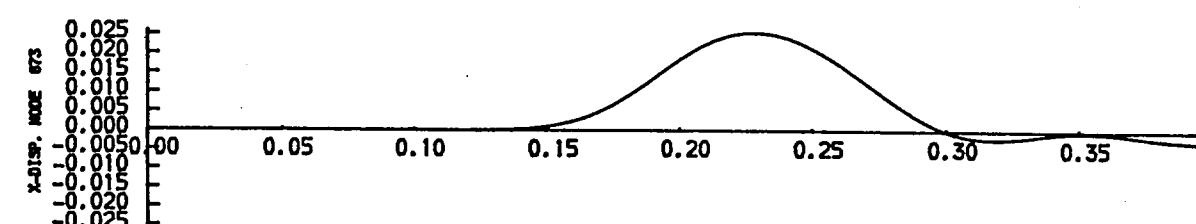
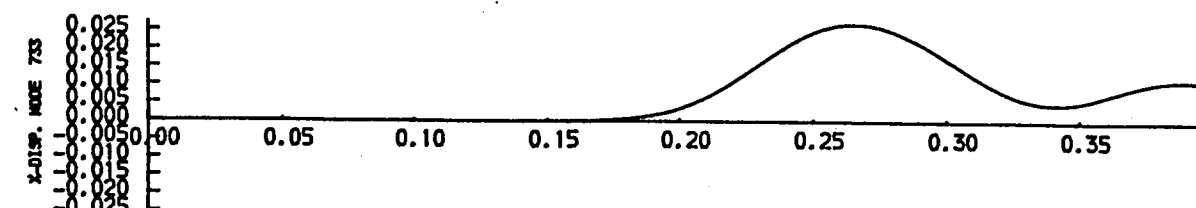
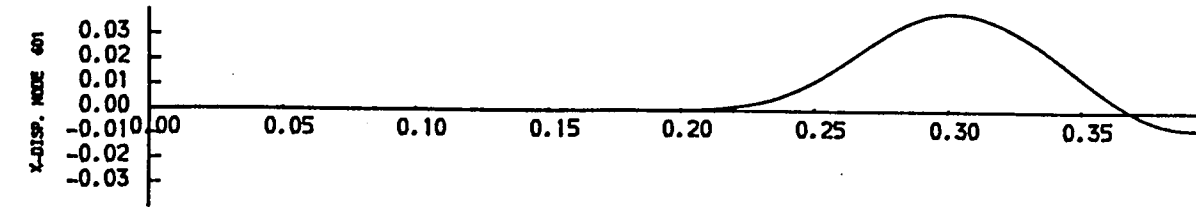
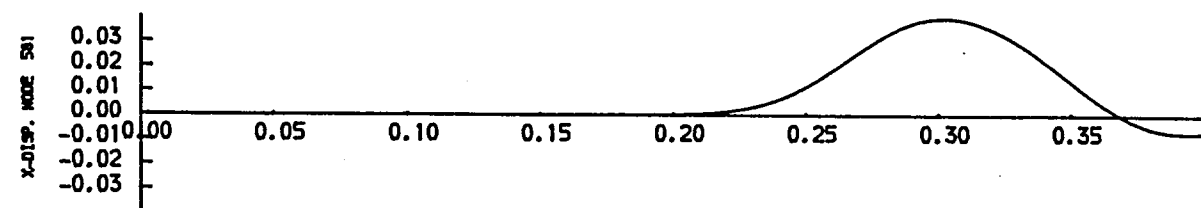
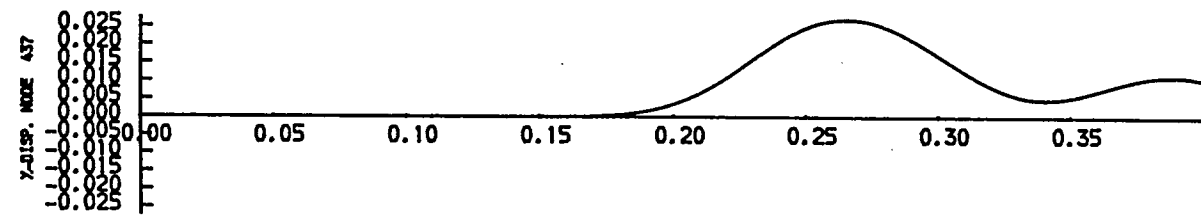
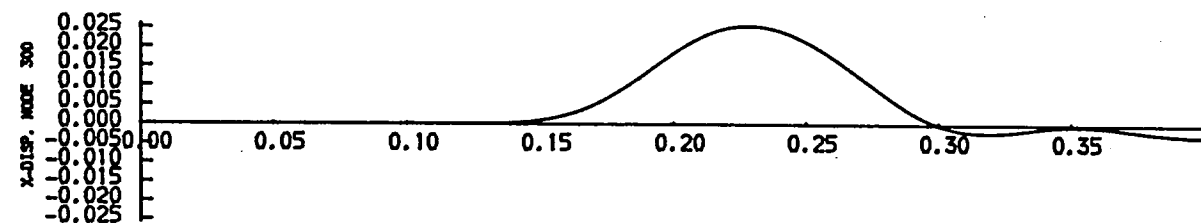
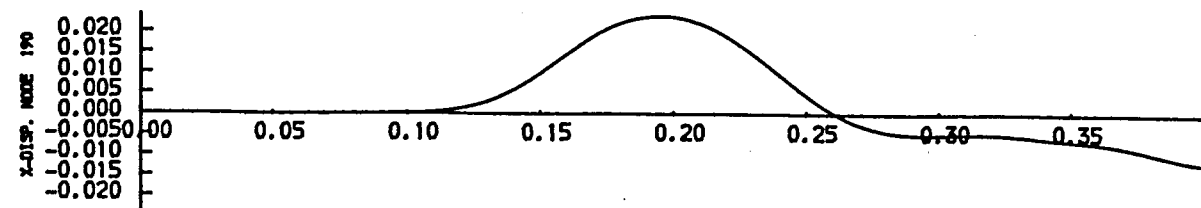
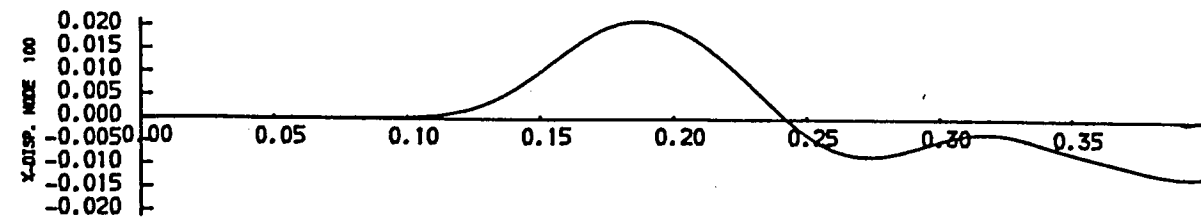


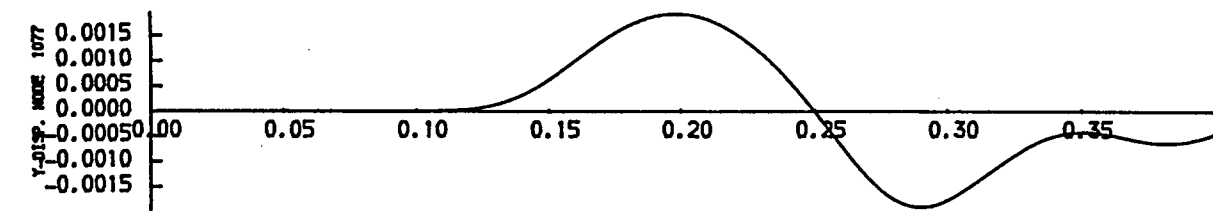
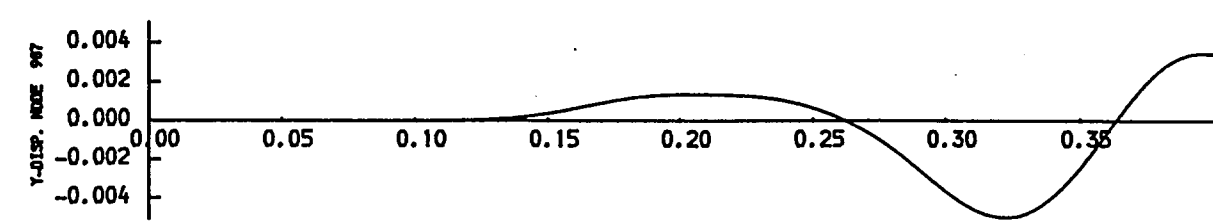
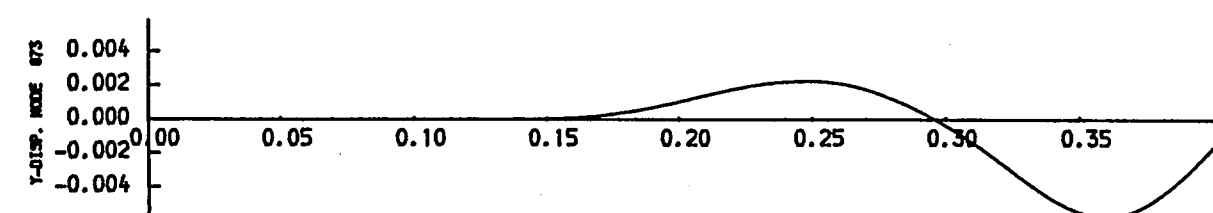
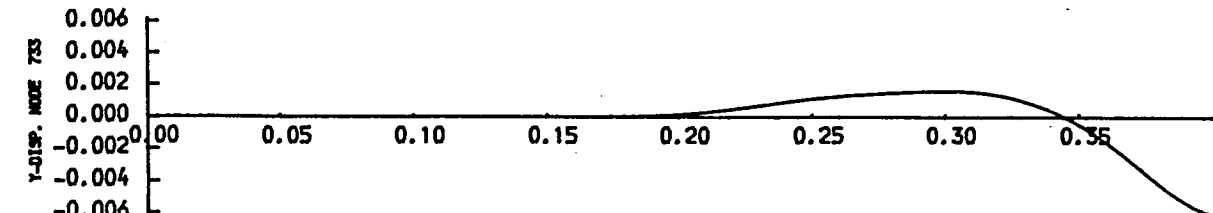
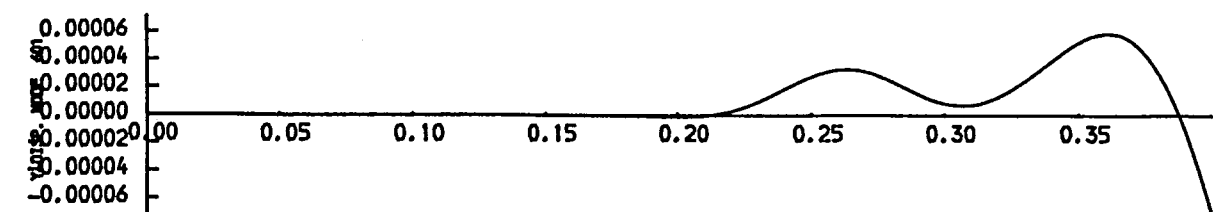
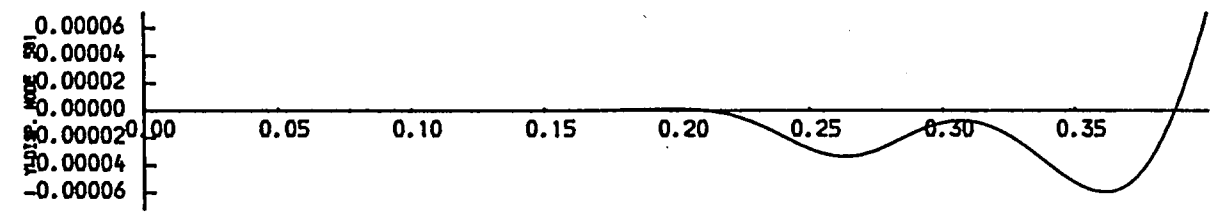
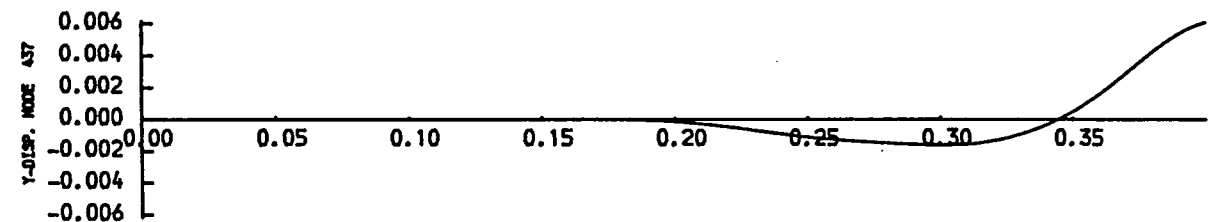
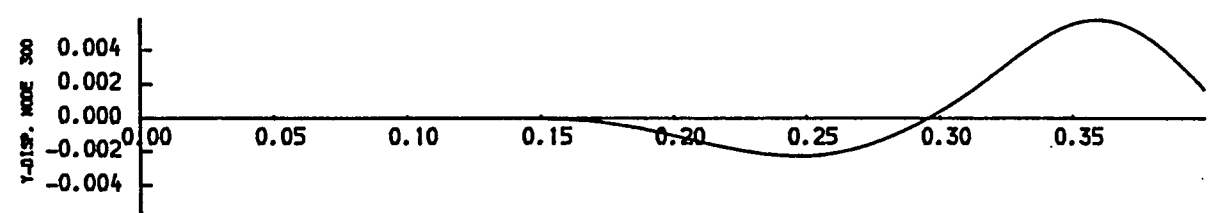
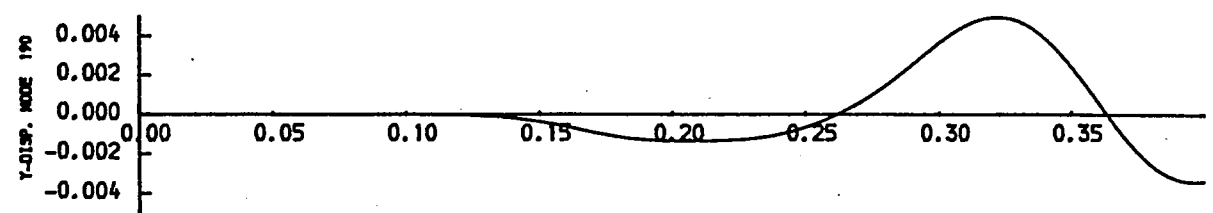
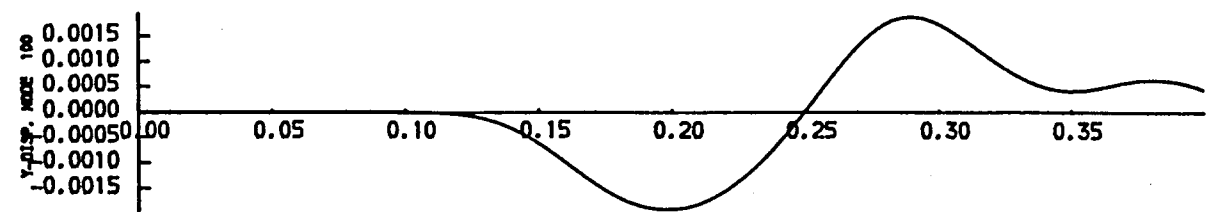
Time-displacement graphs and stress distributions for $D1/3$

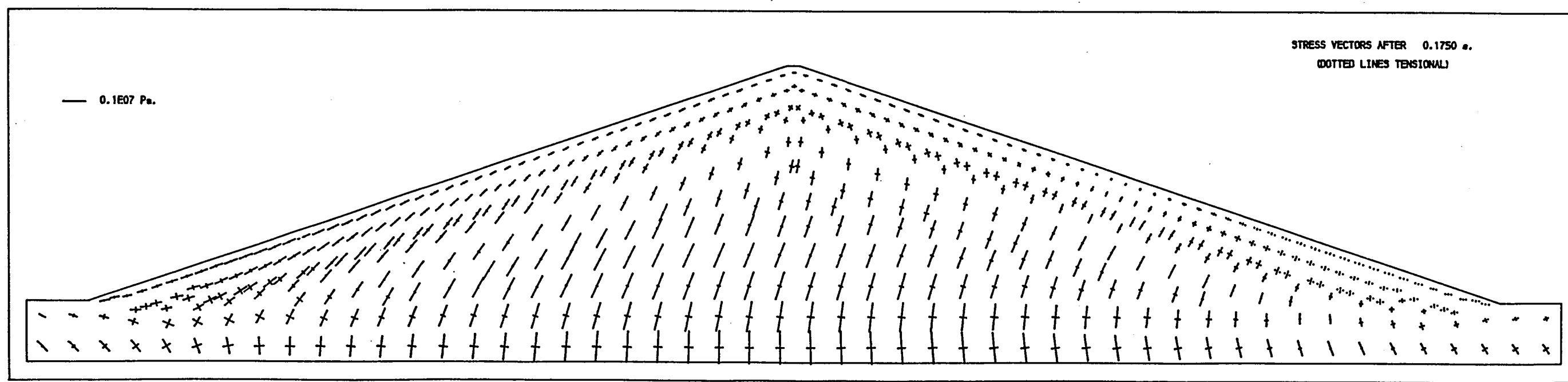
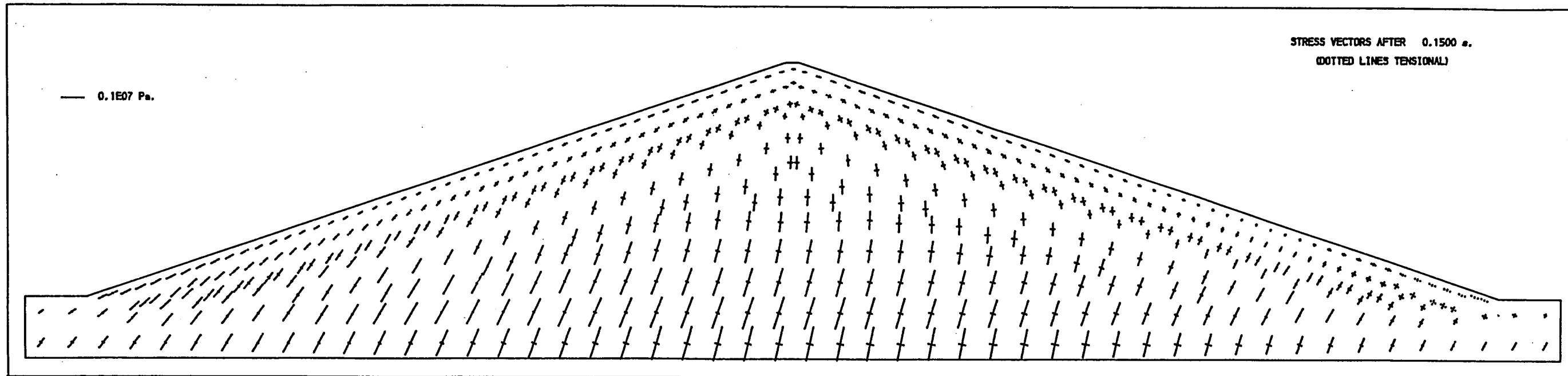
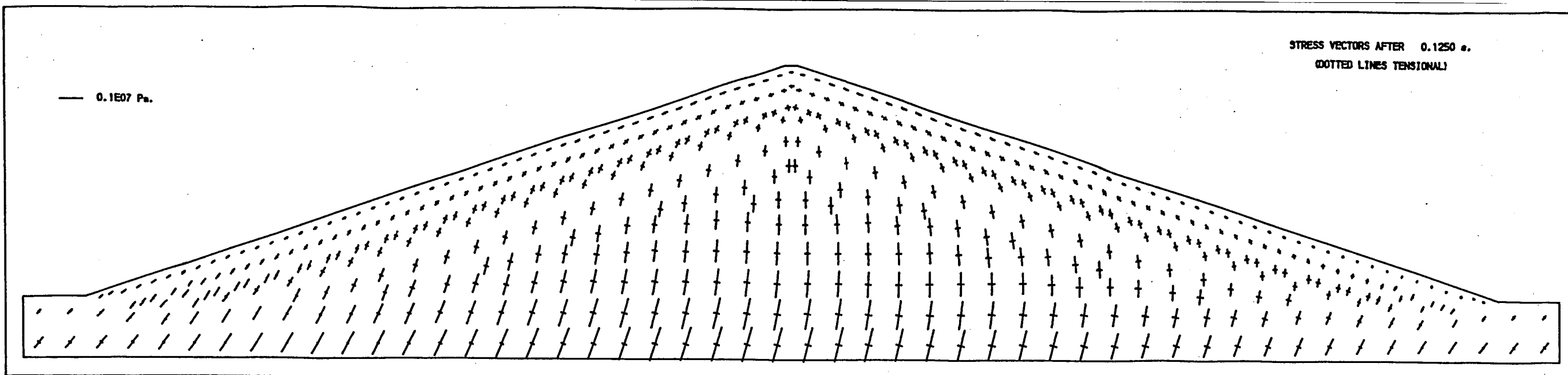
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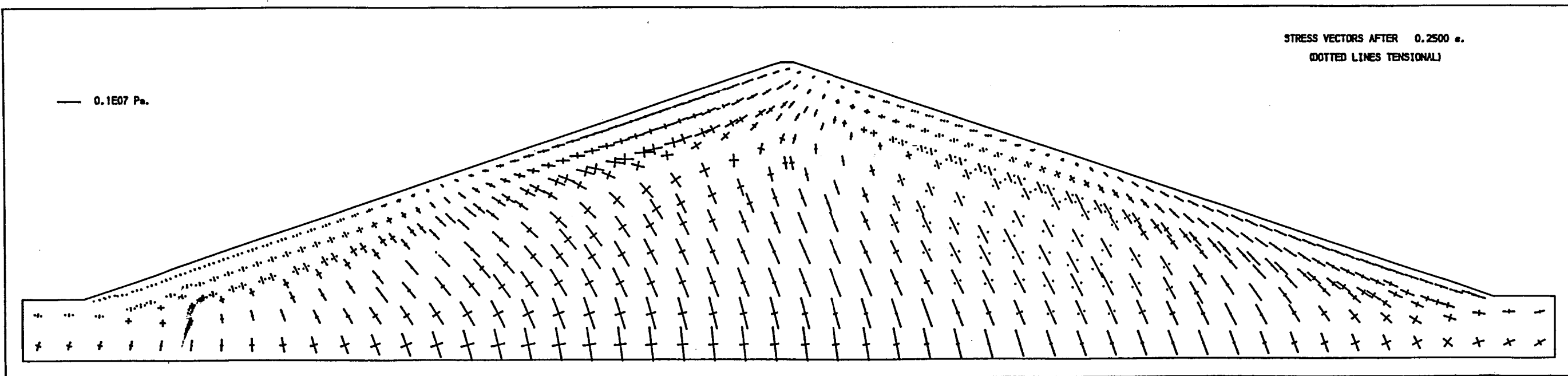
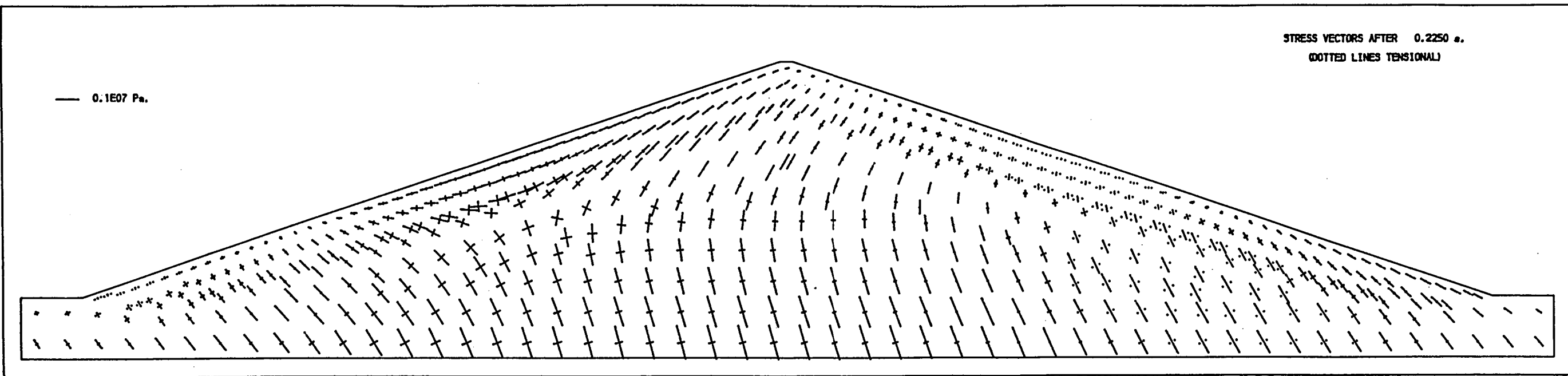
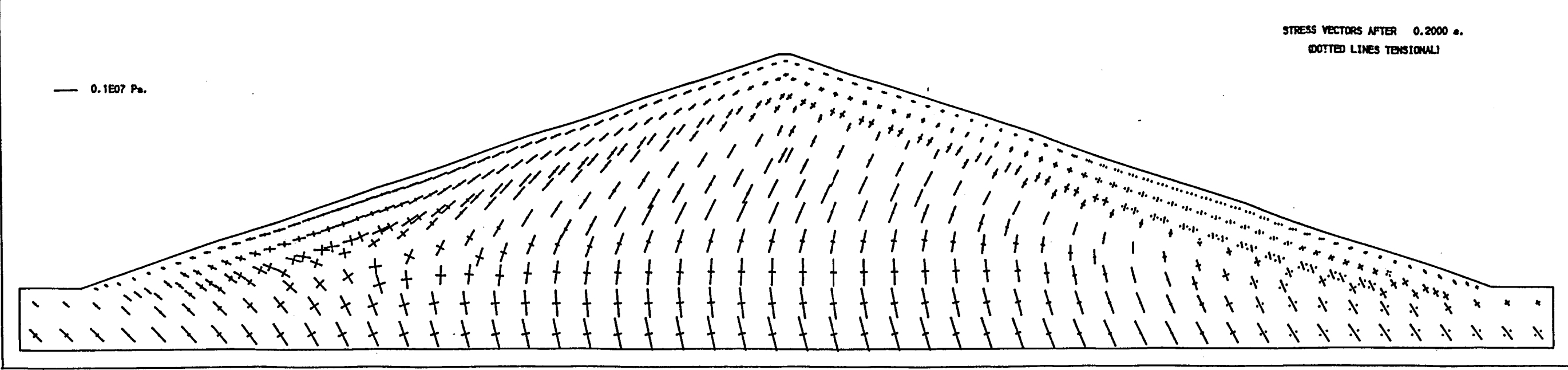
Angle of incidence 0°

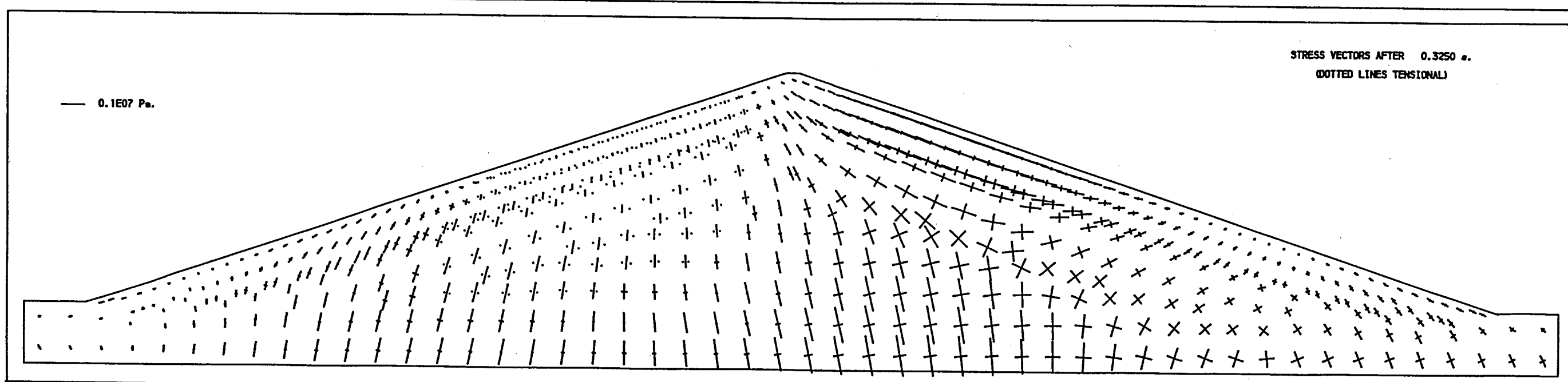
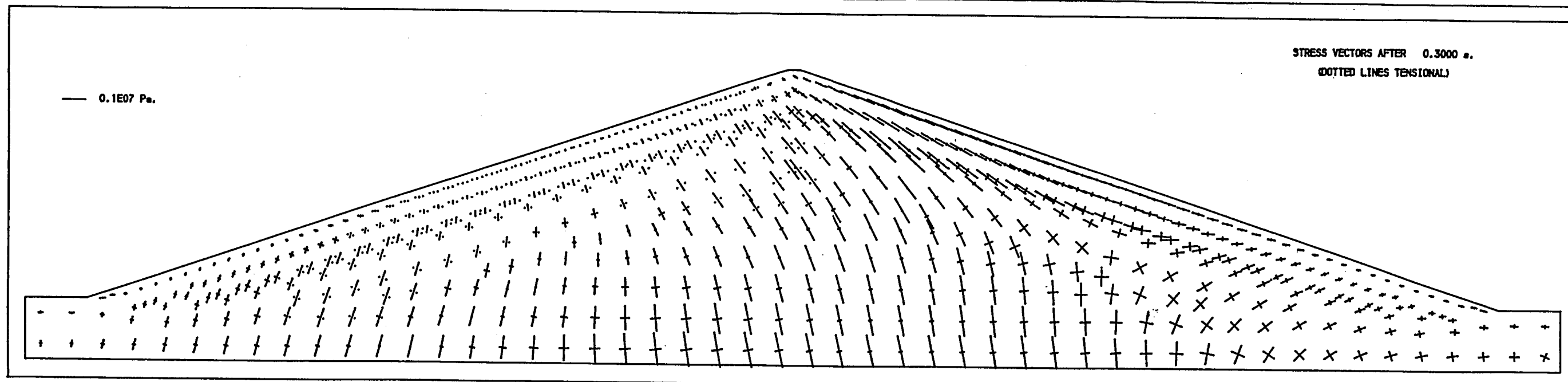
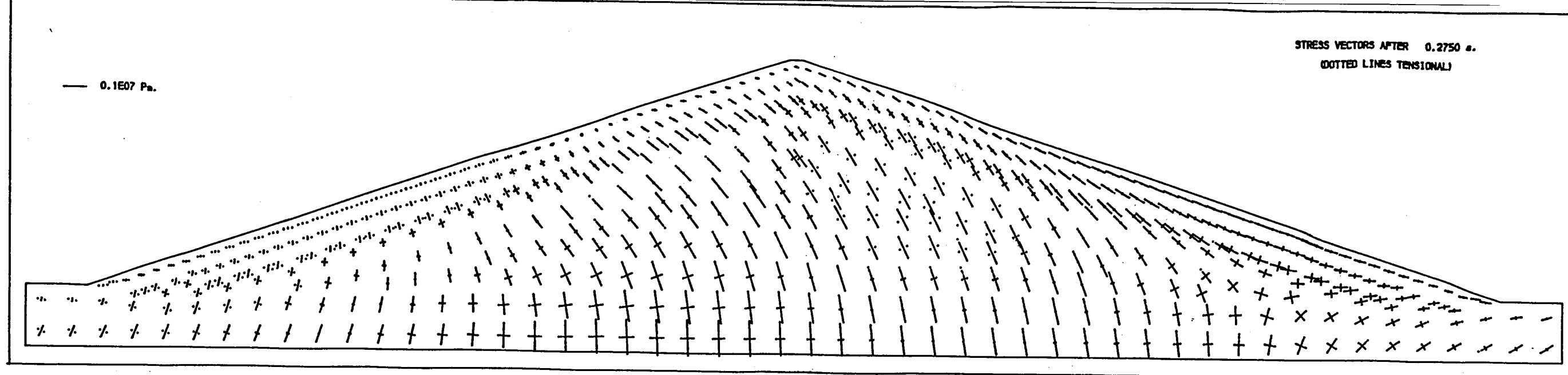
Base acceleration g

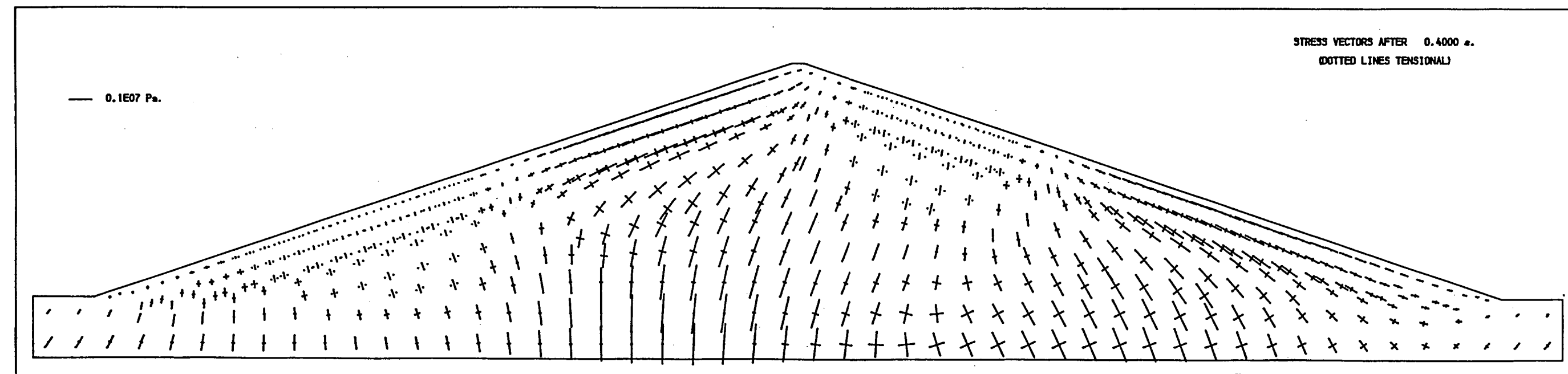
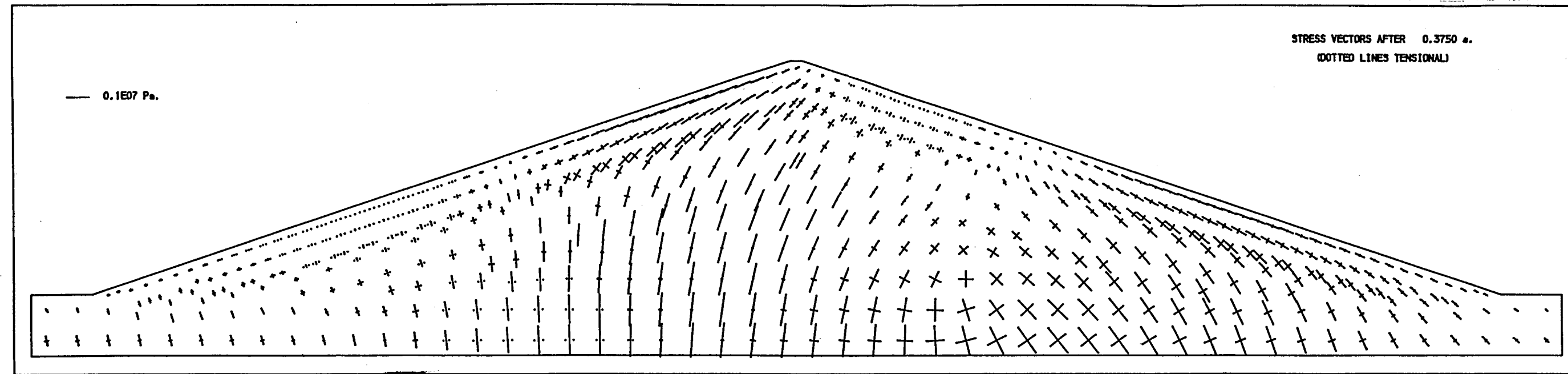
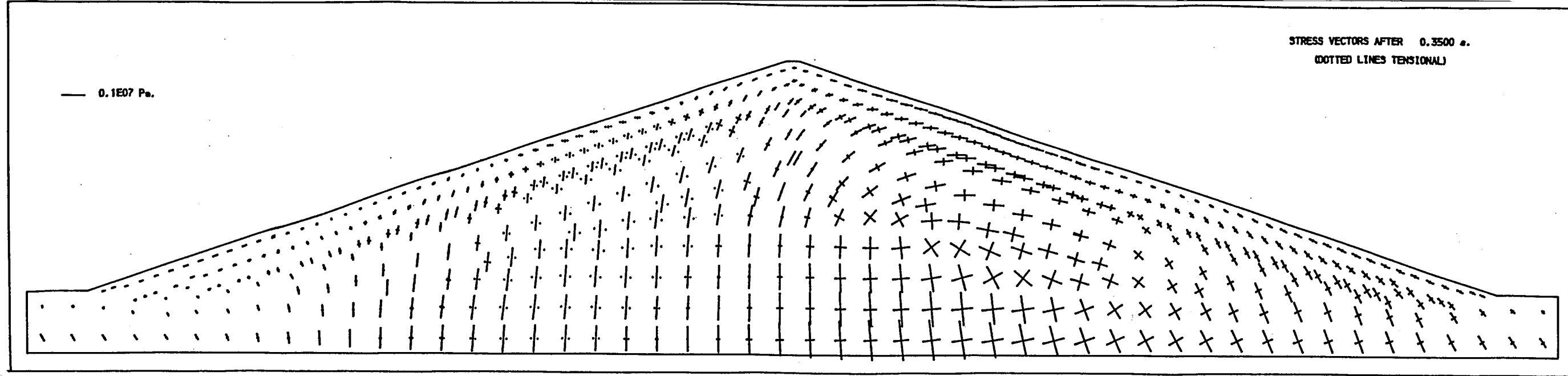










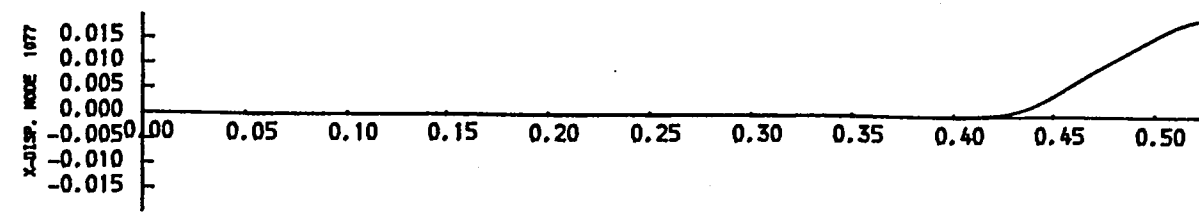
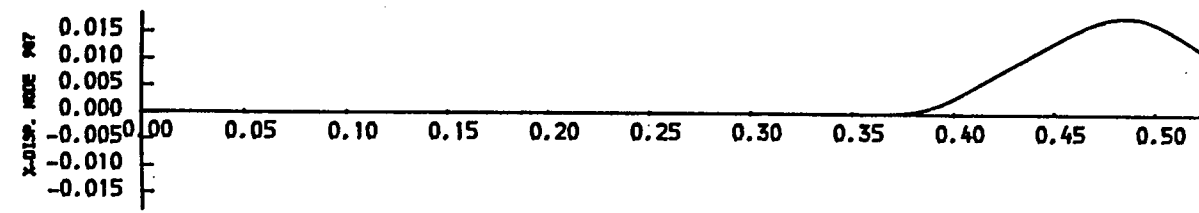
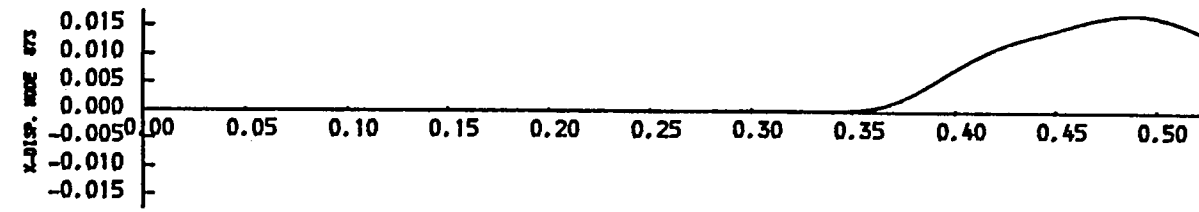
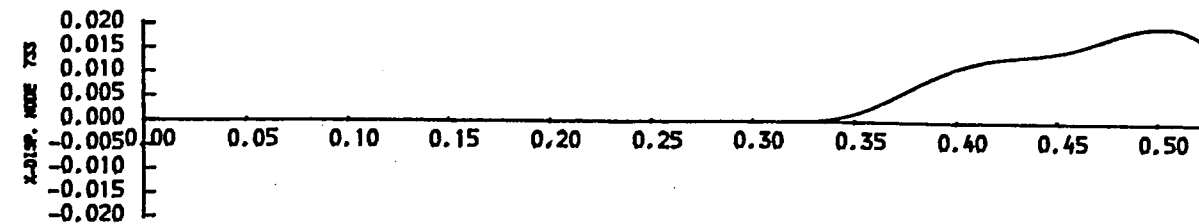
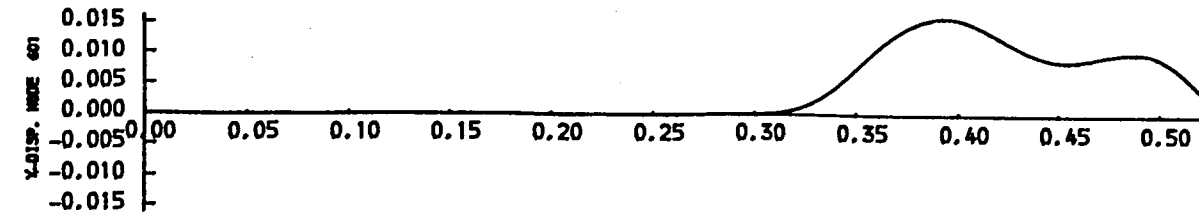
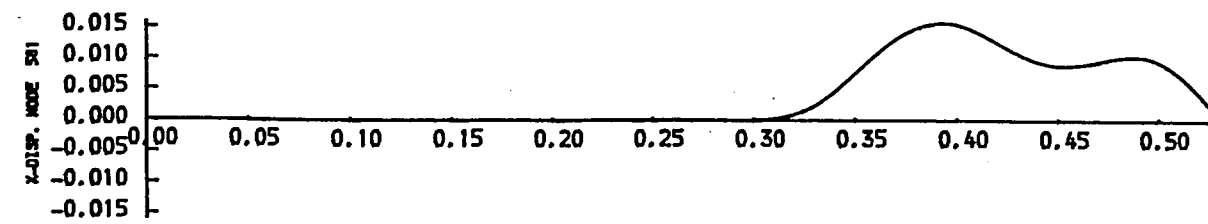
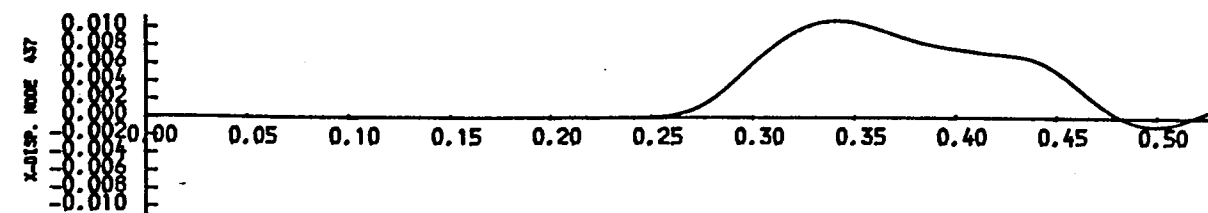
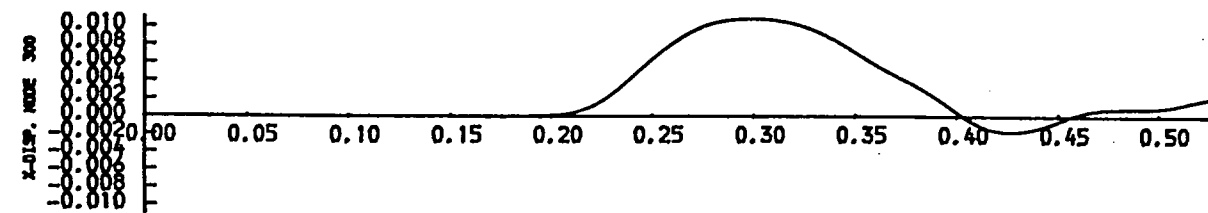
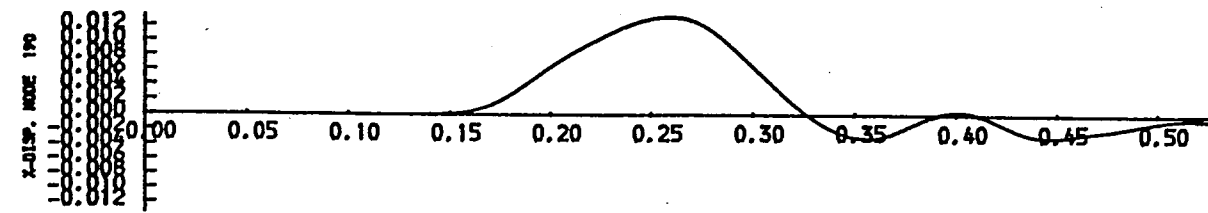
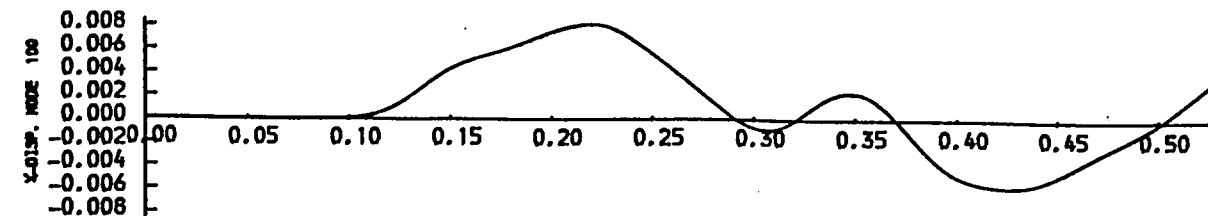


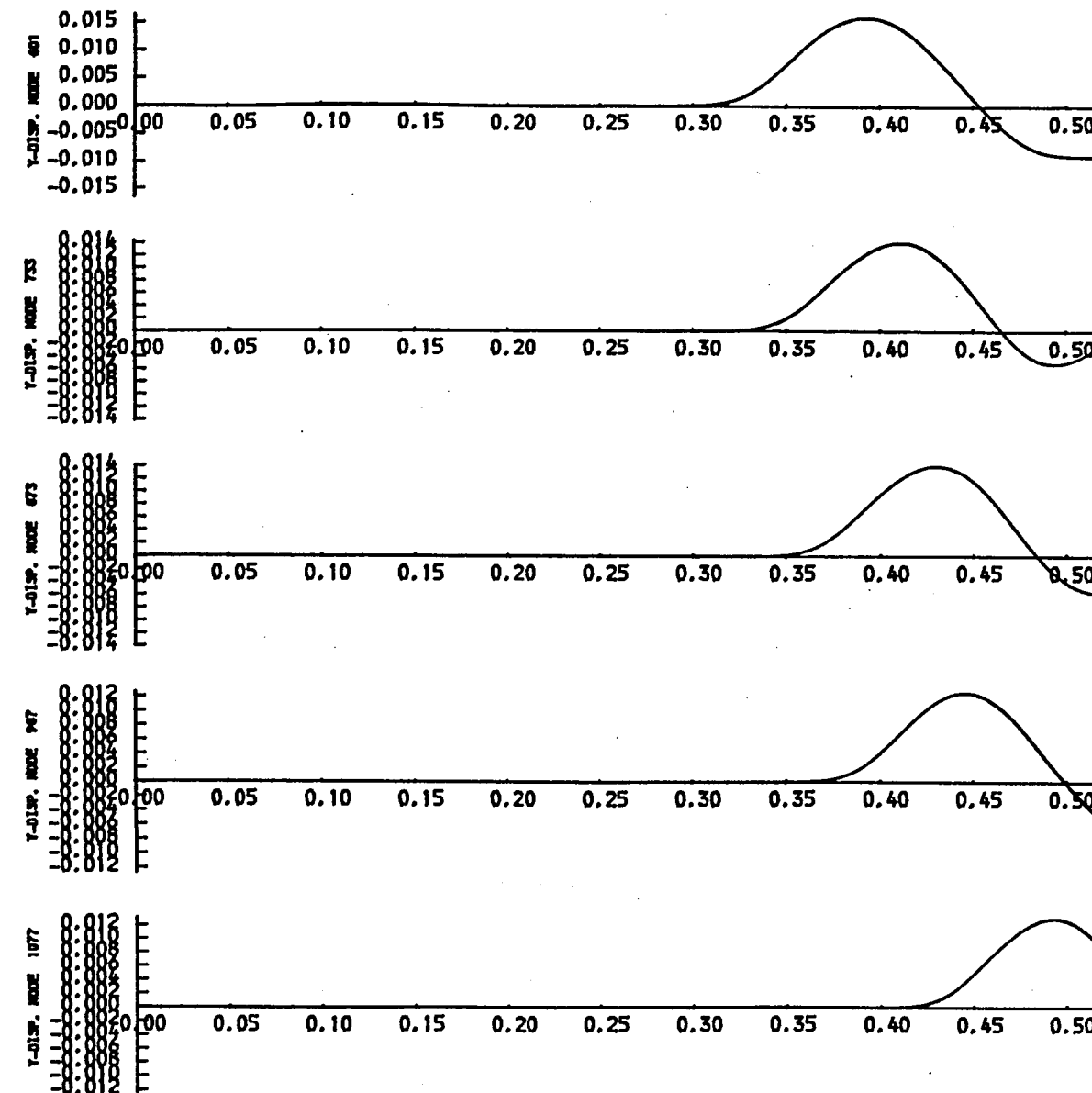
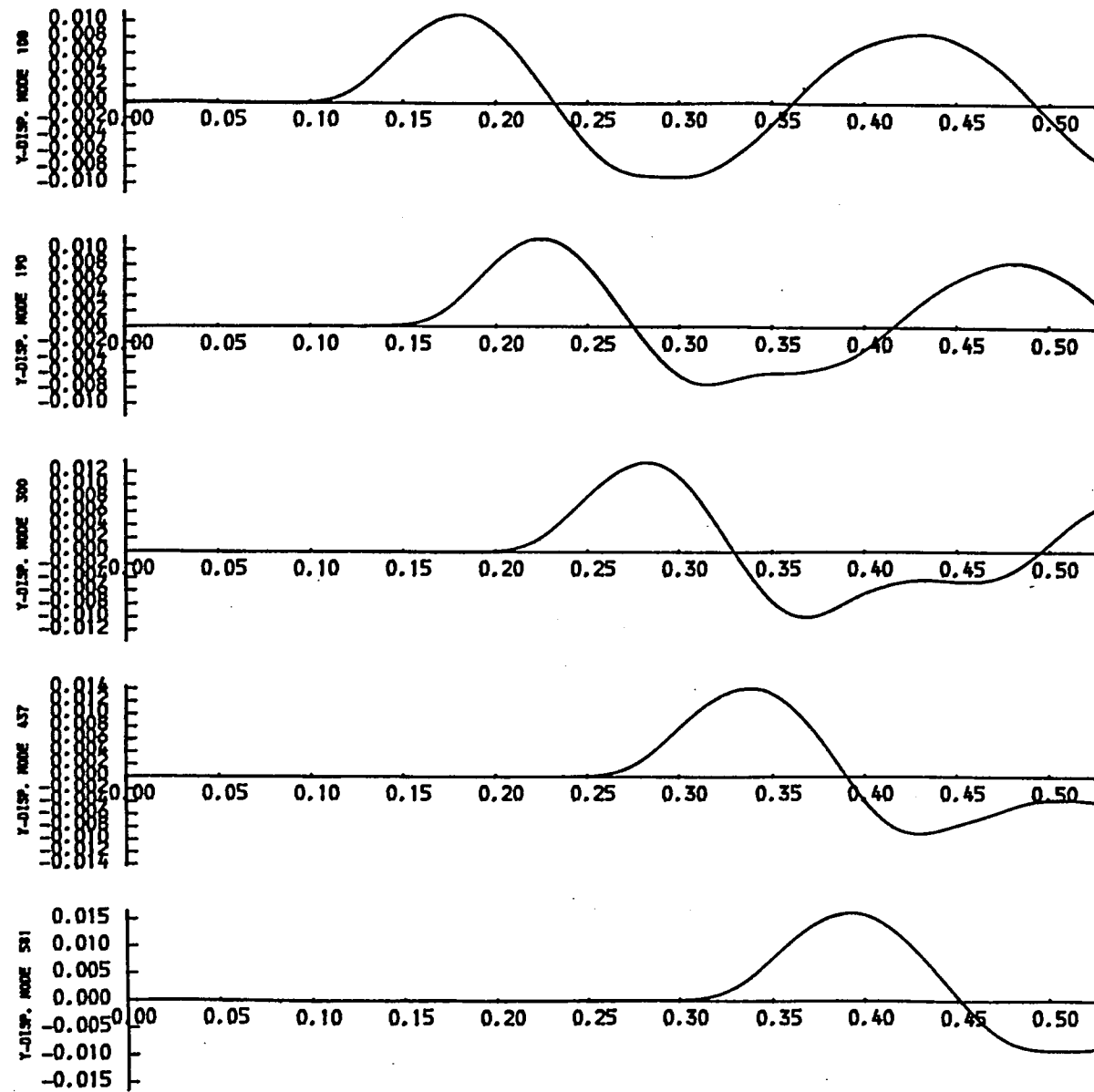
Time-displacement graphs and stress distributions for D1/4

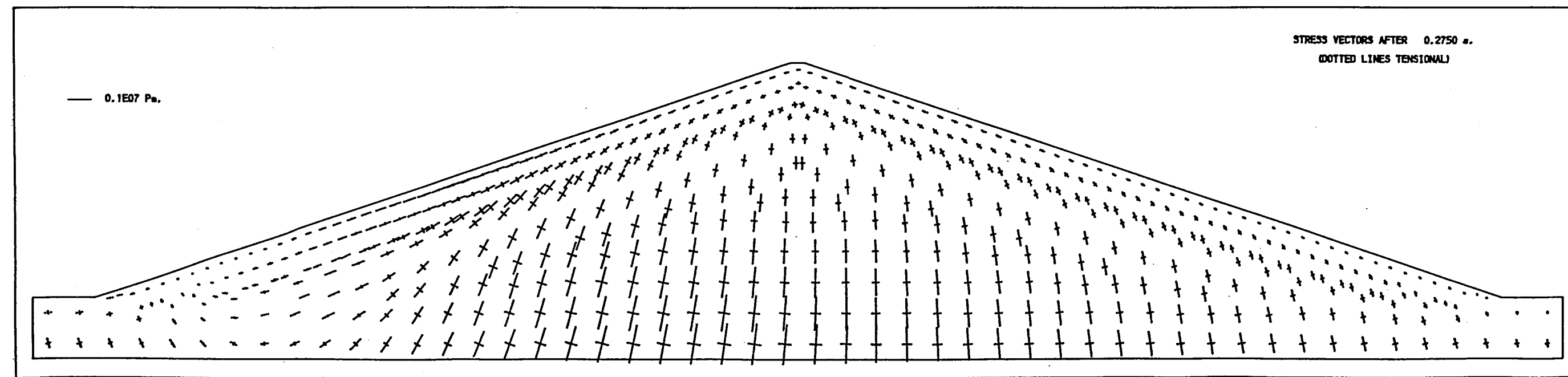
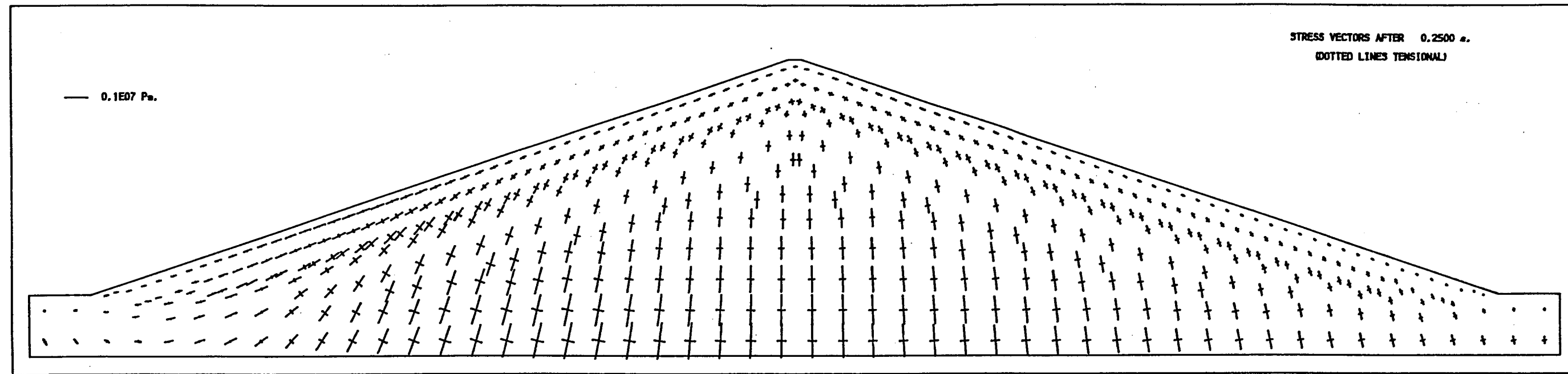
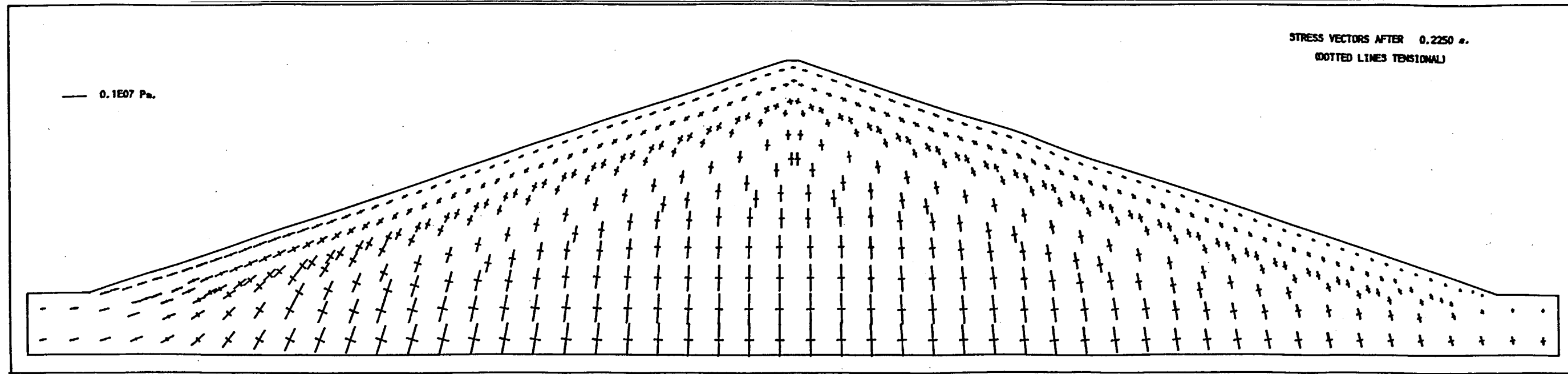
S-wave

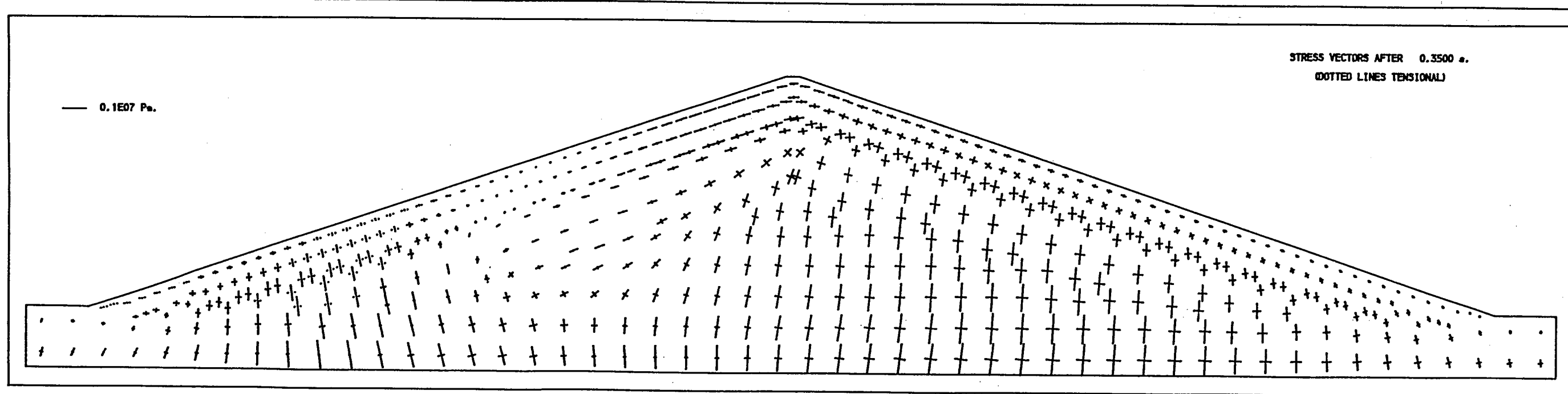
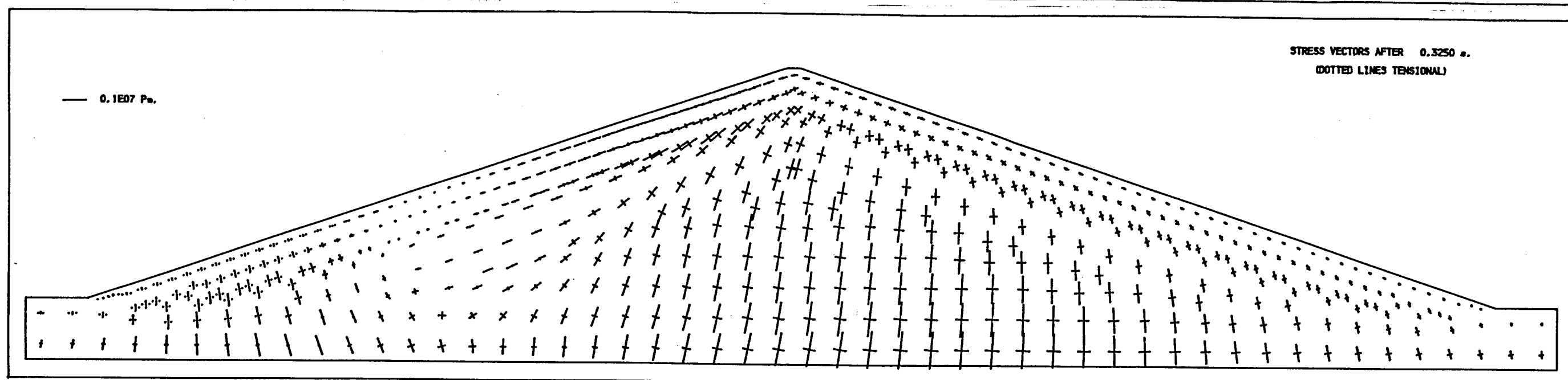
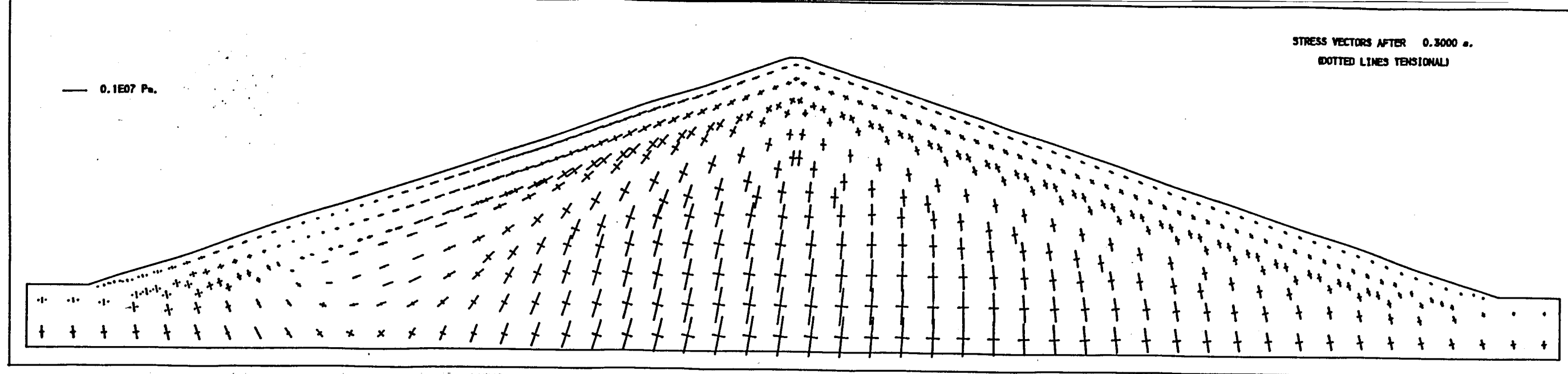
Angle of incidence 20°

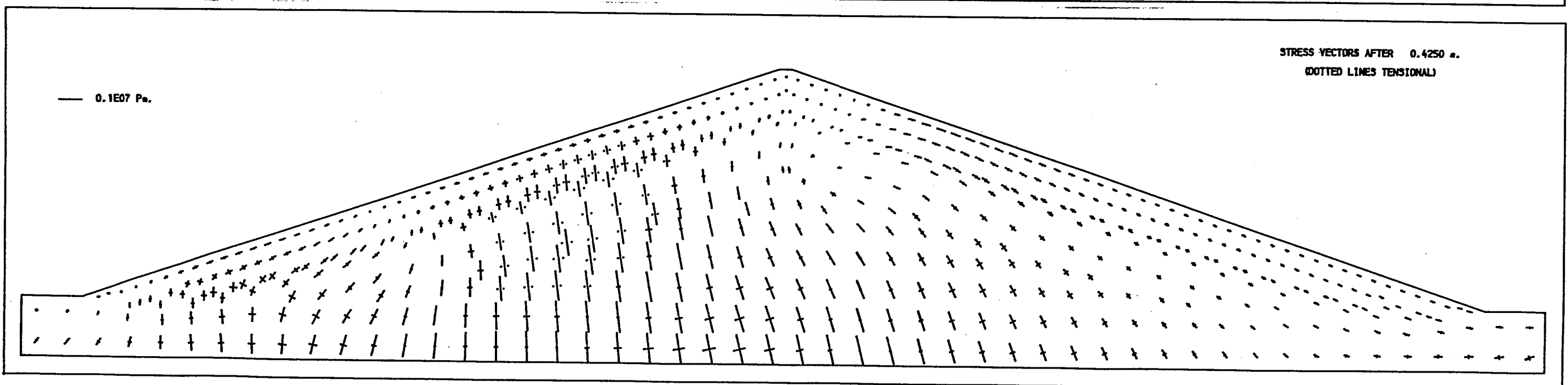
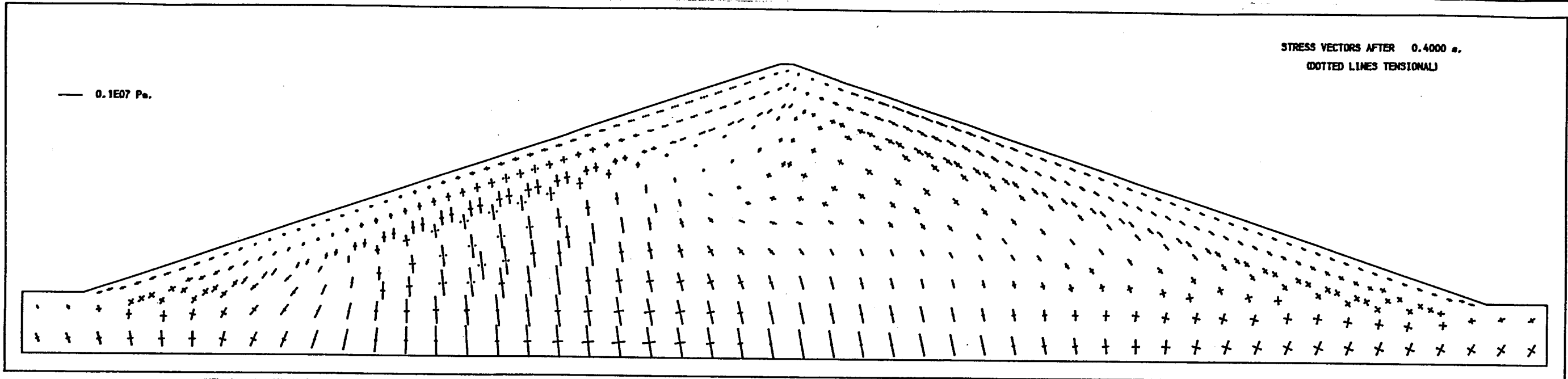
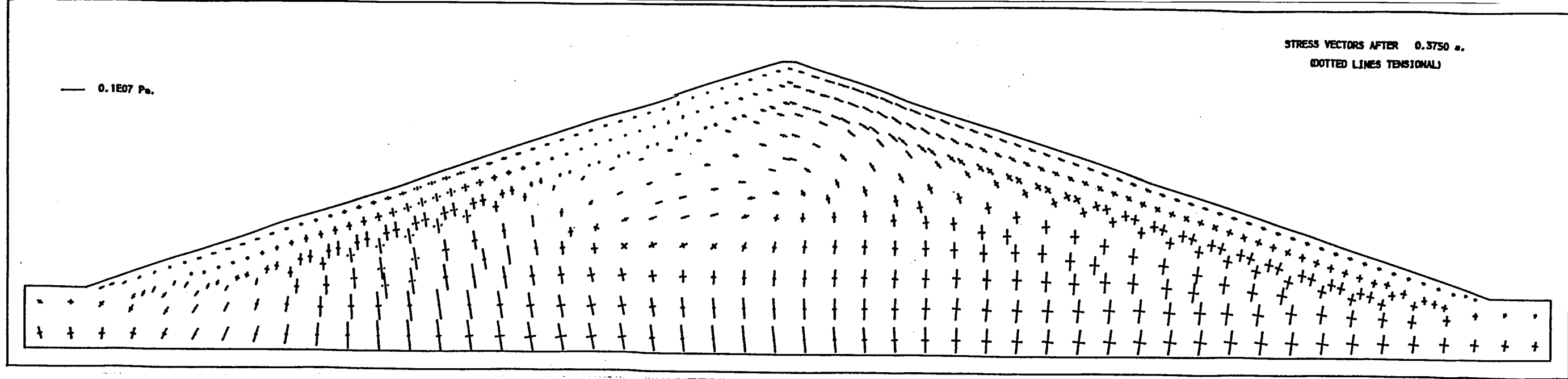
Base acceleration g

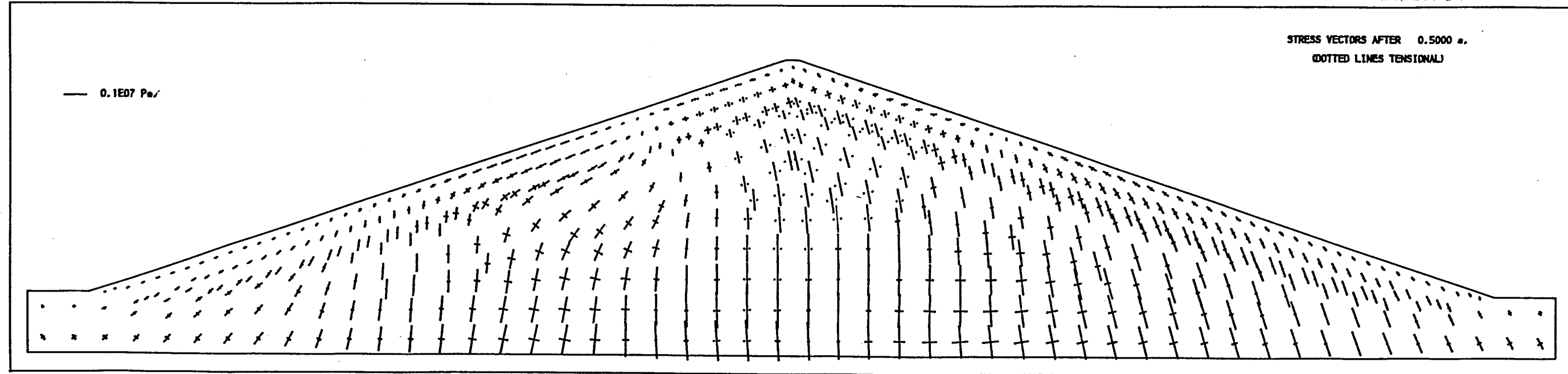
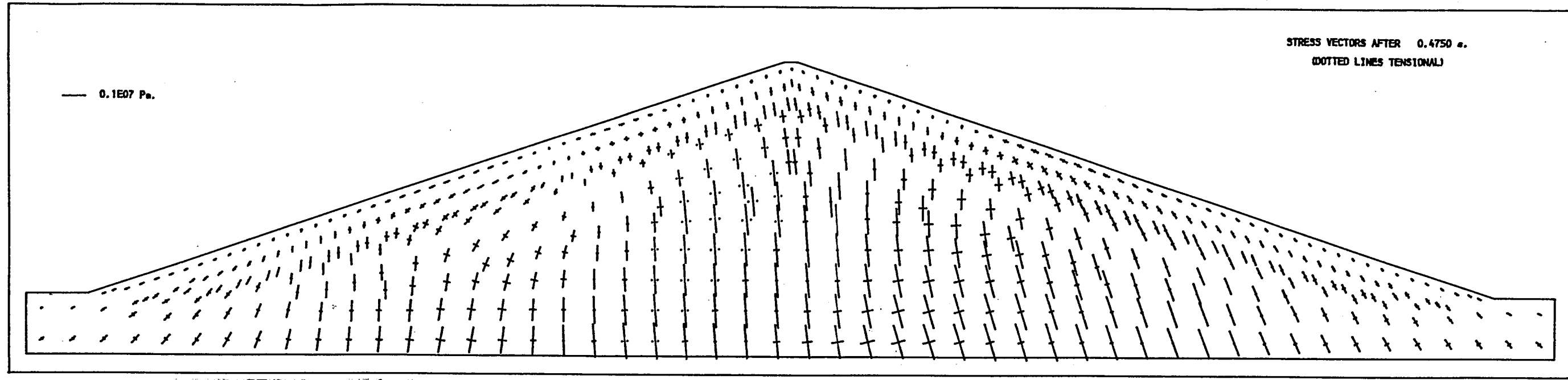
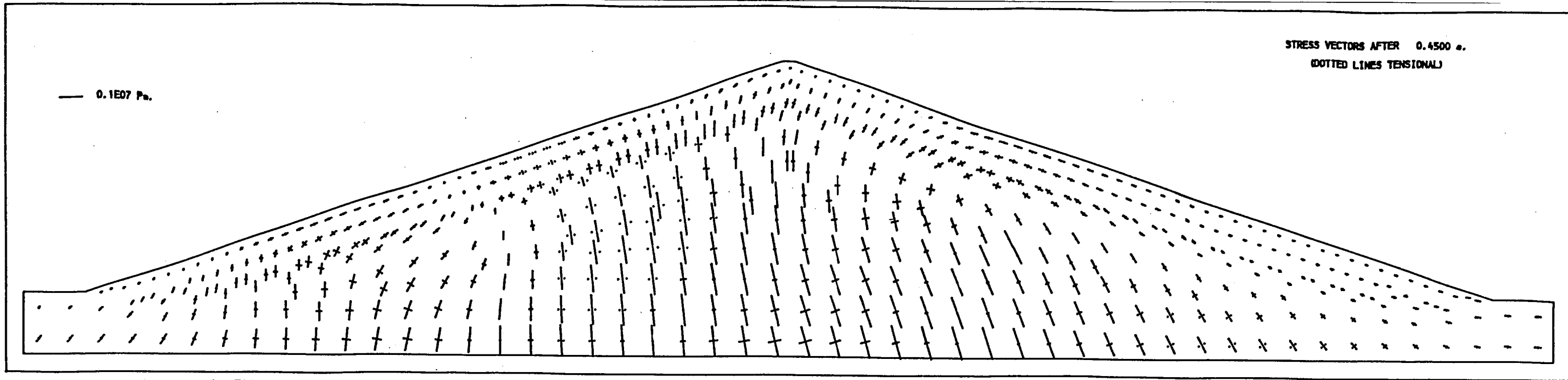










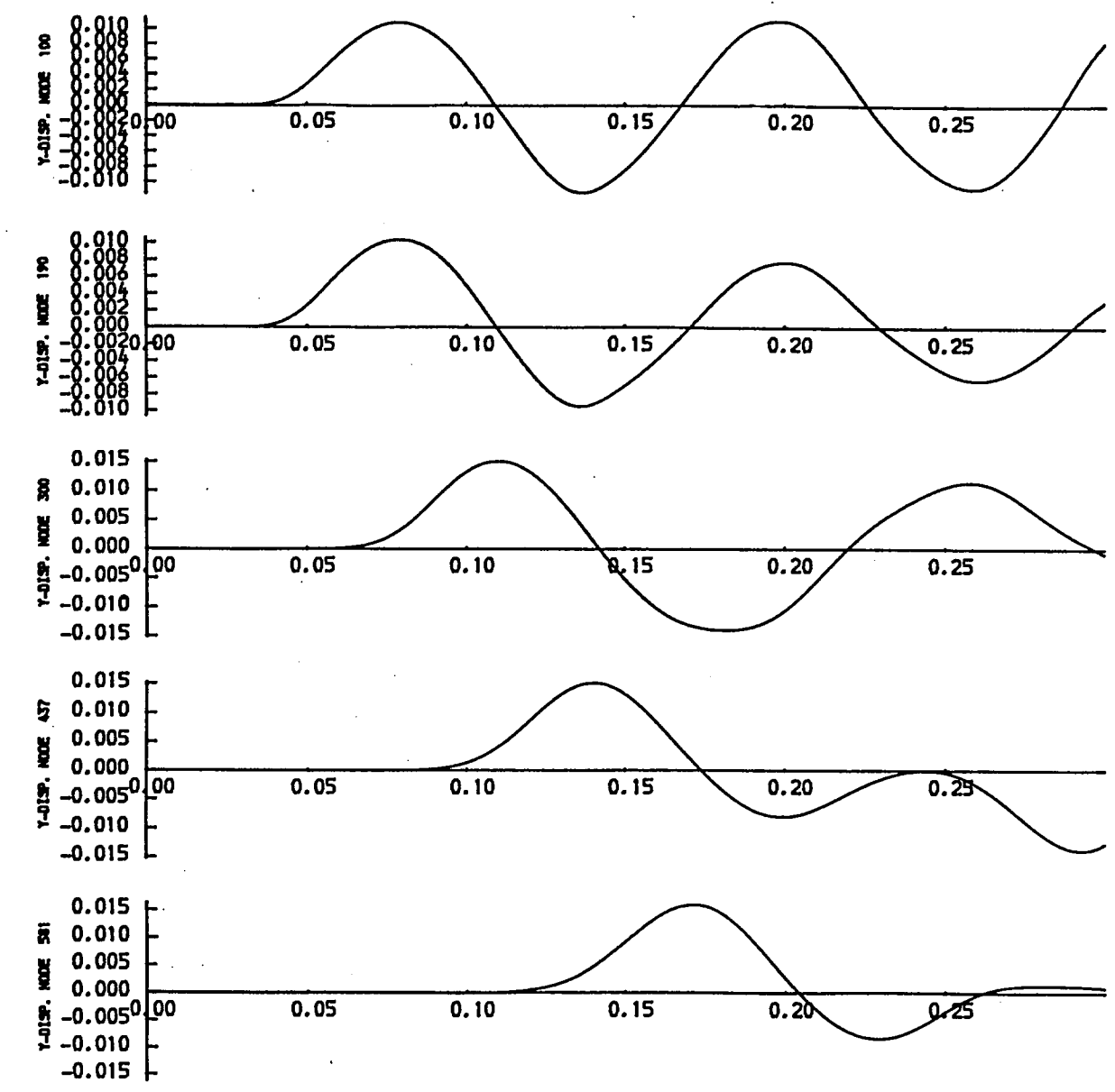
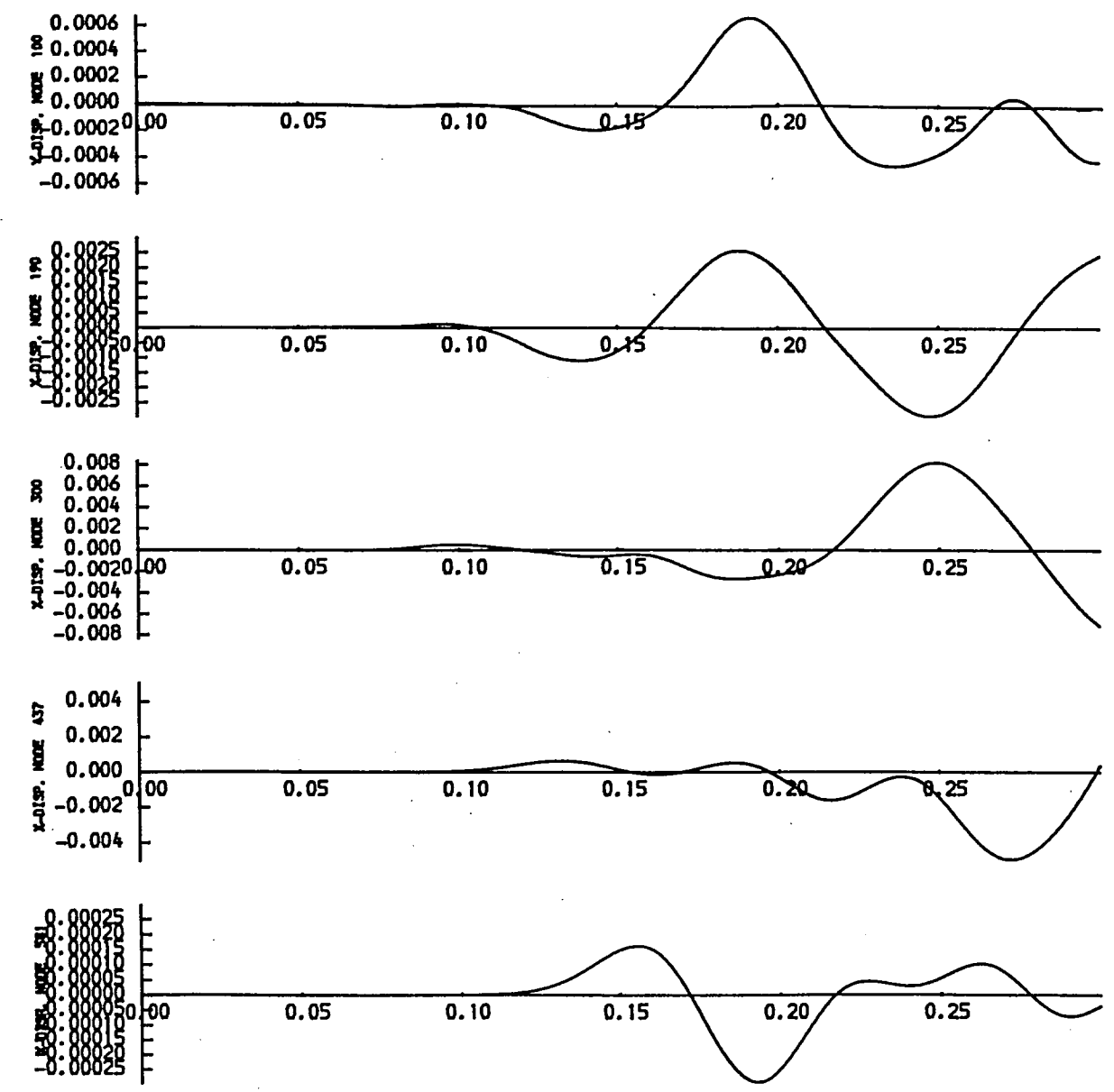


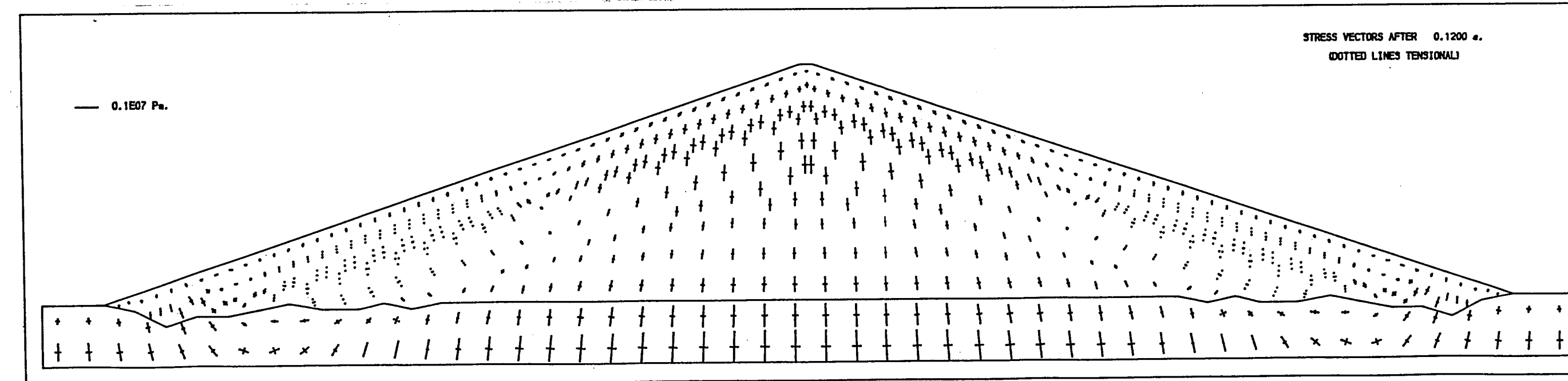
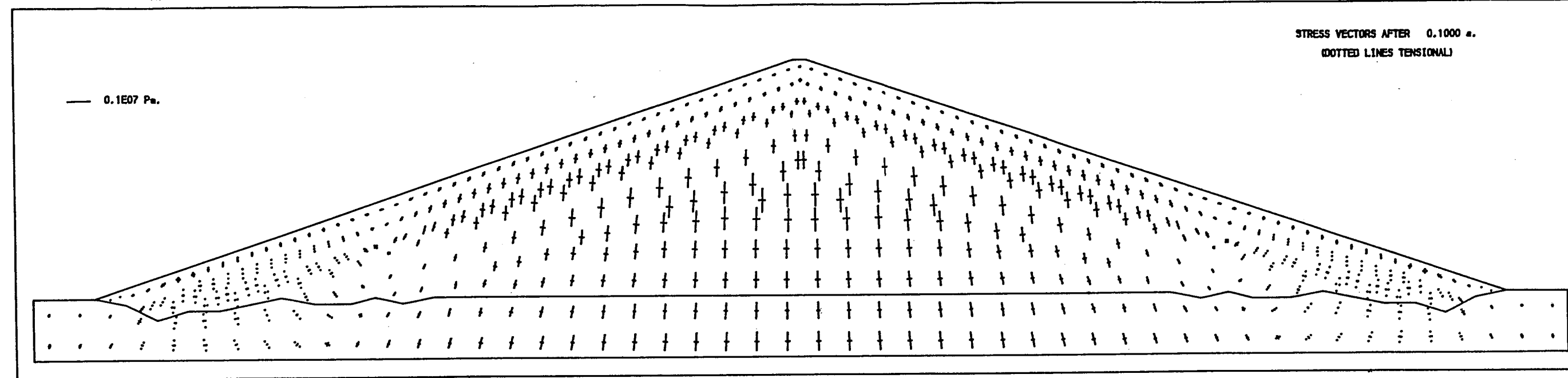
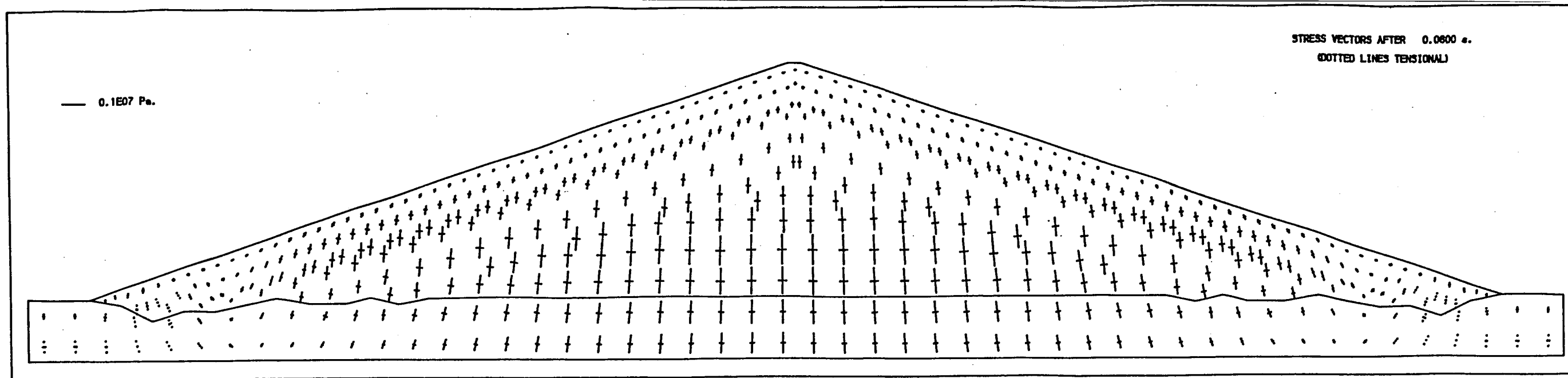
Time-displacement graphs and stress distributions for D2/1

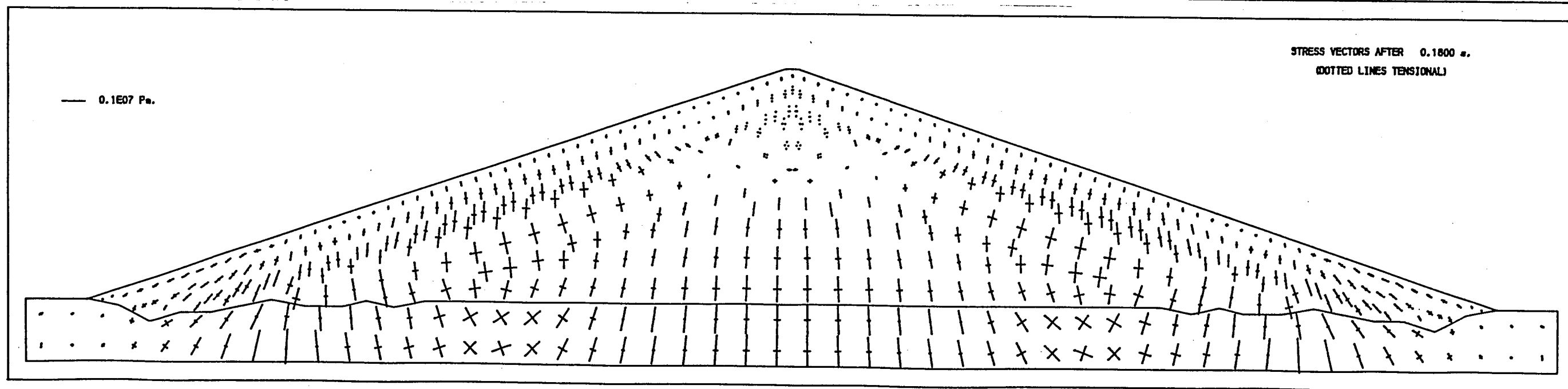
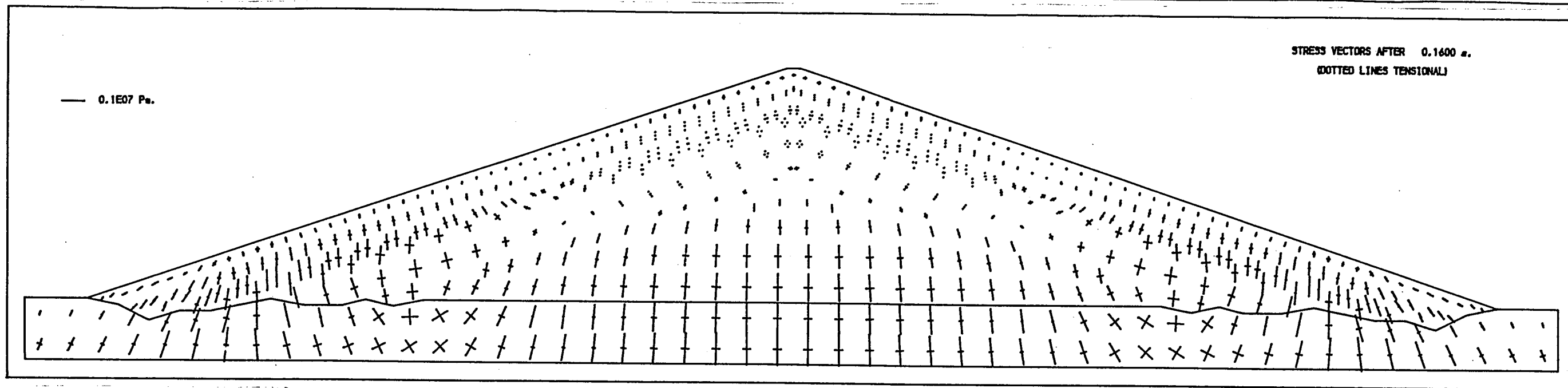
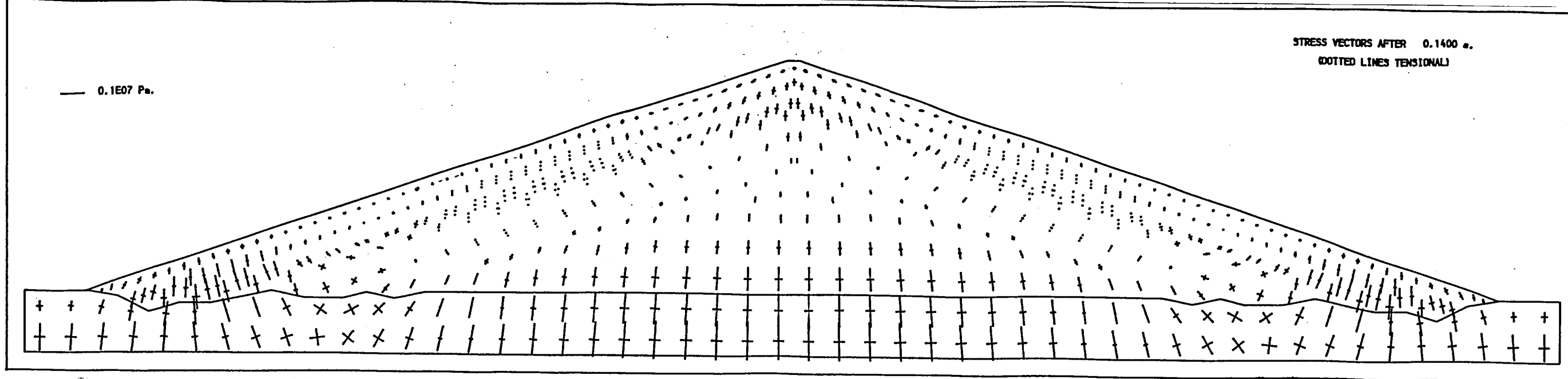
P-wave

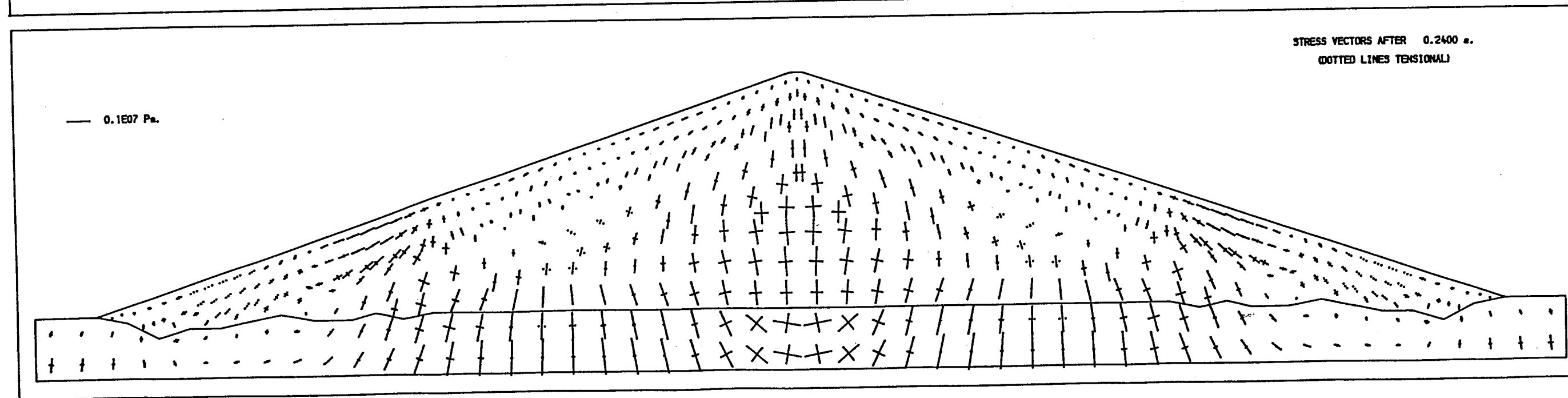
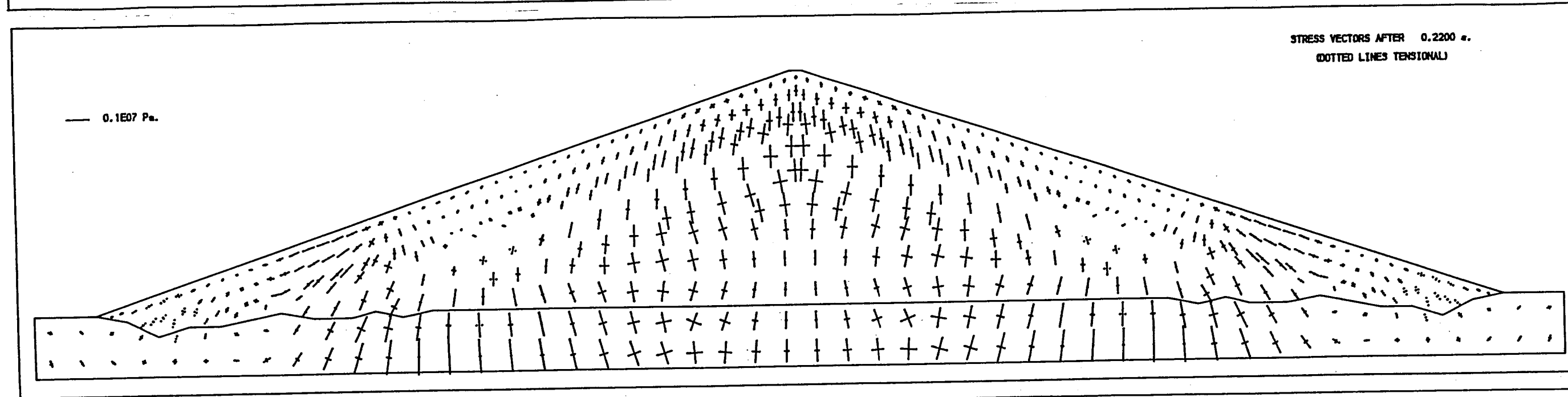
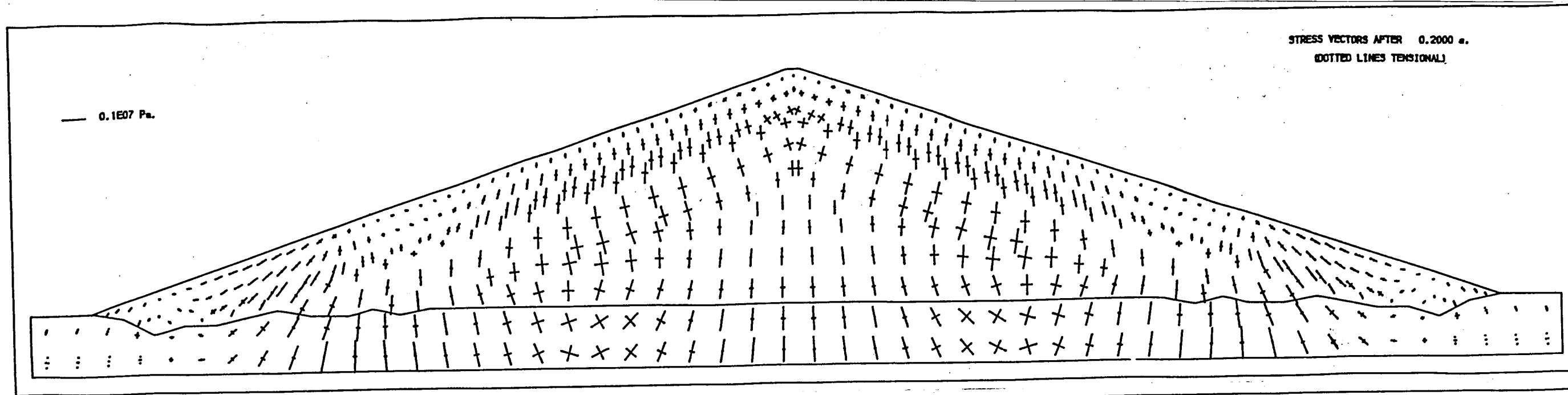
Angle of incidence 0°

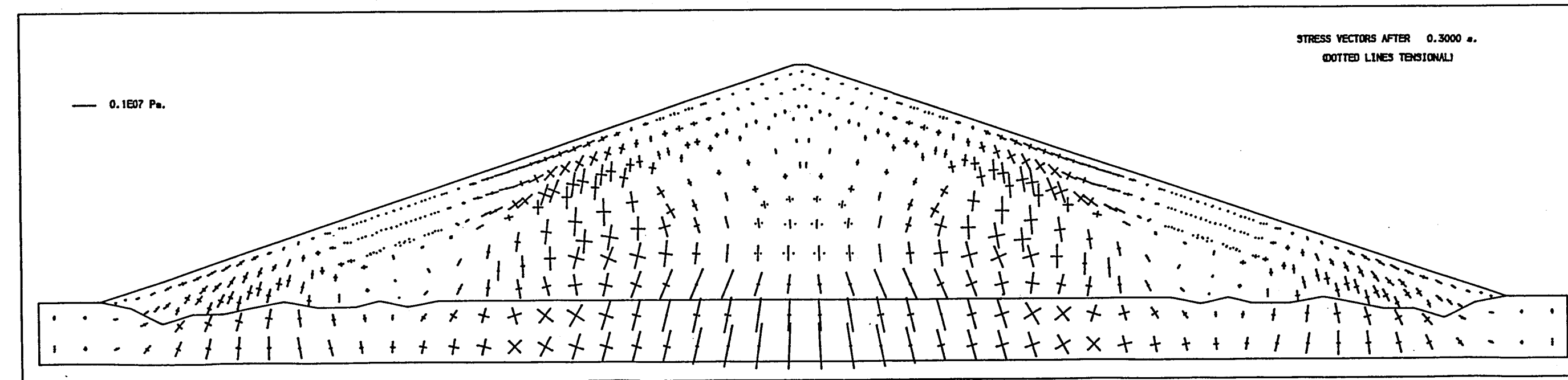
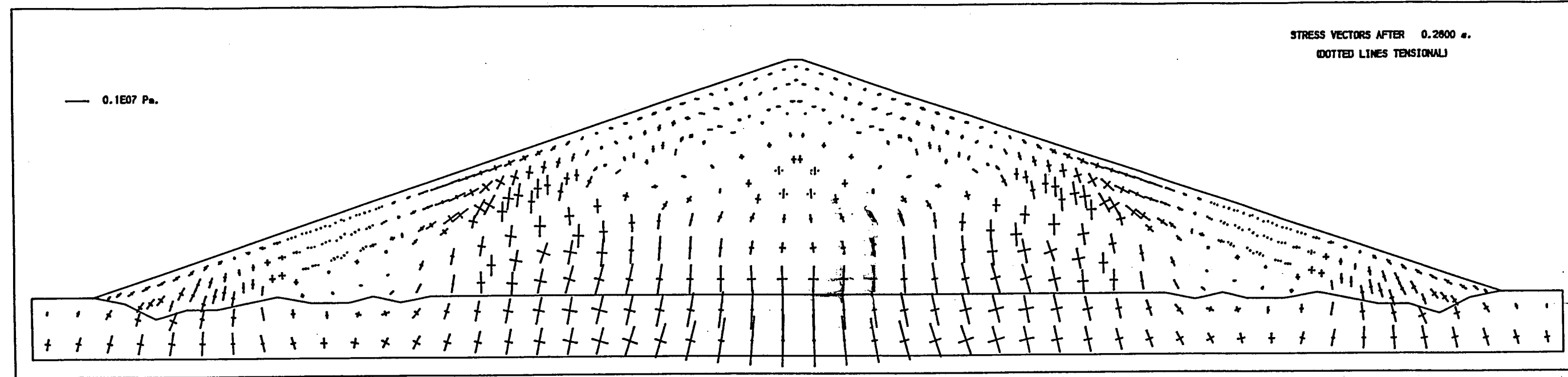
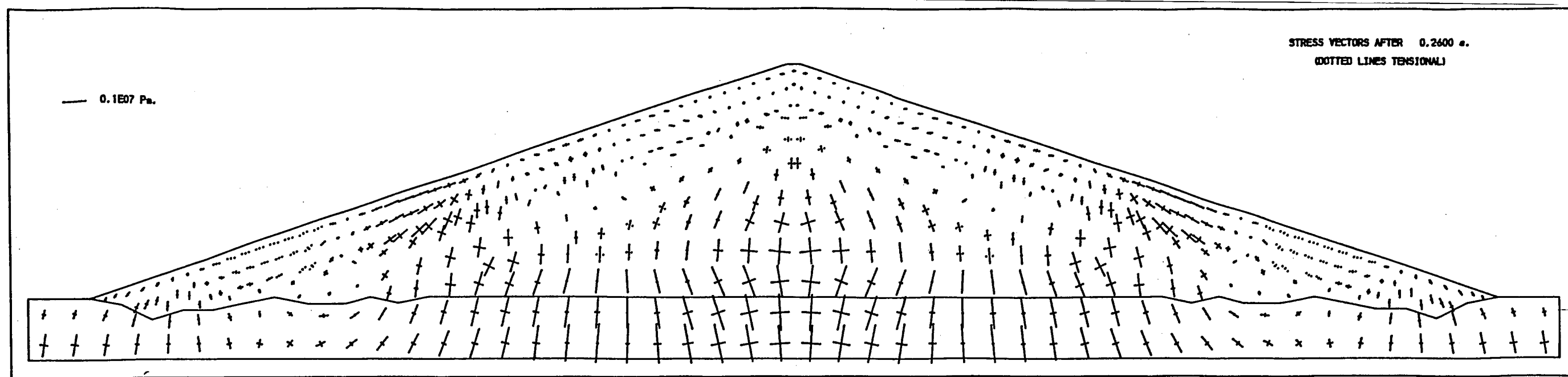
Base acceleration g









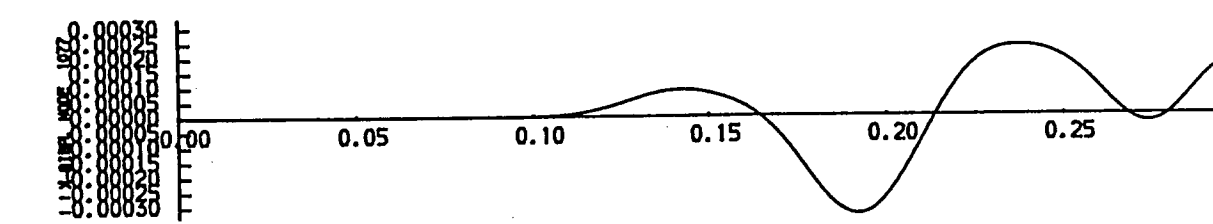
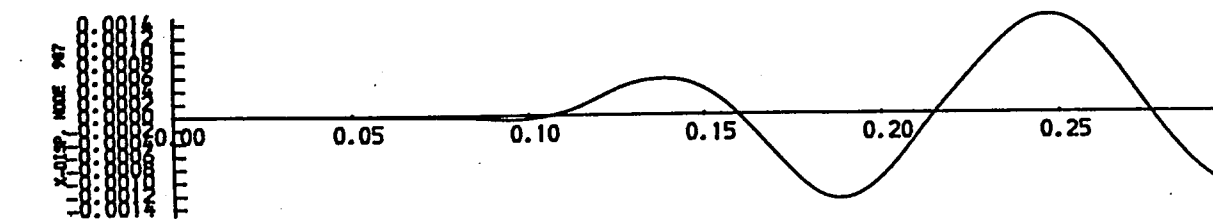
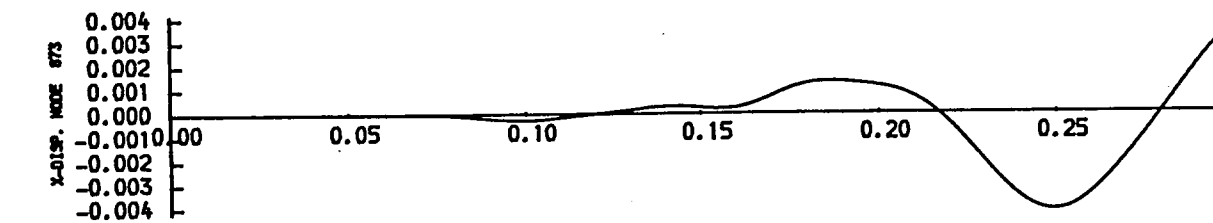
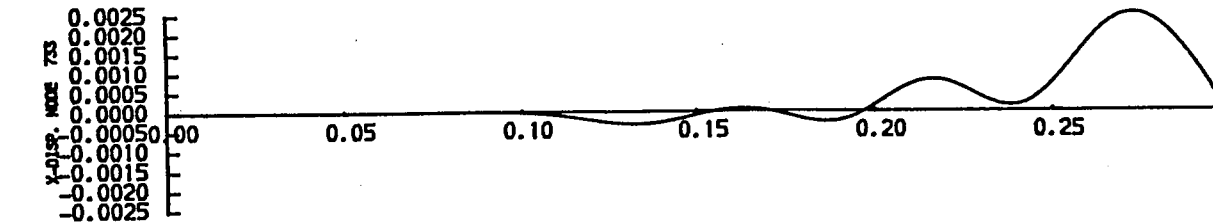
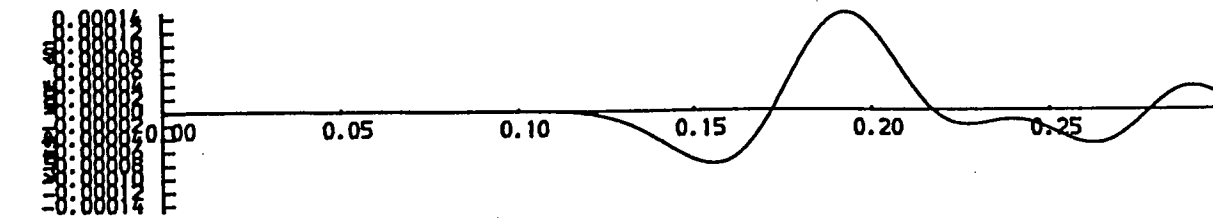
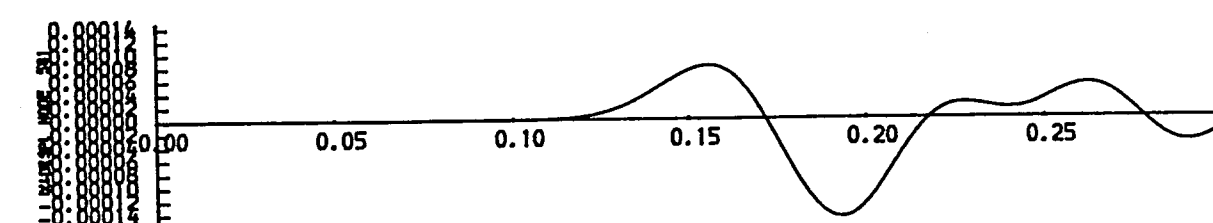
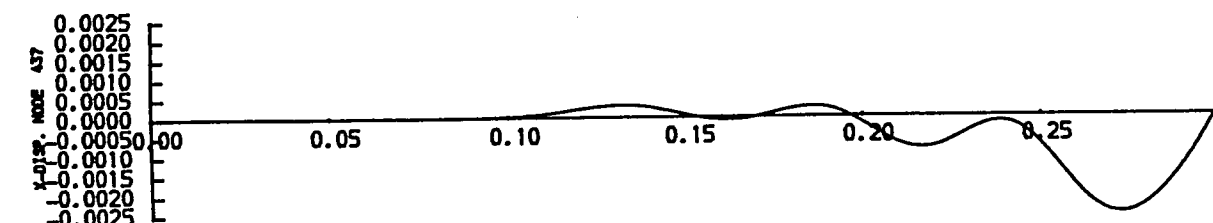
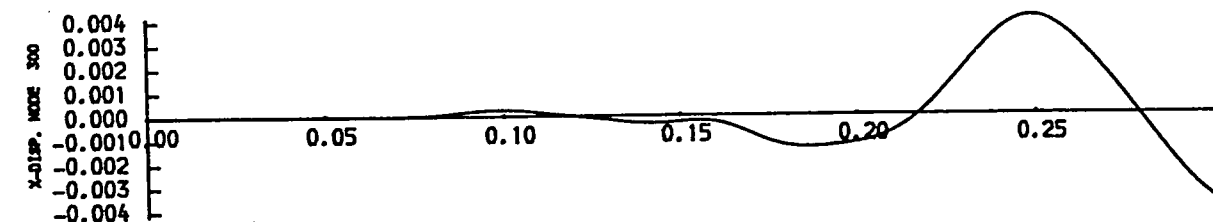
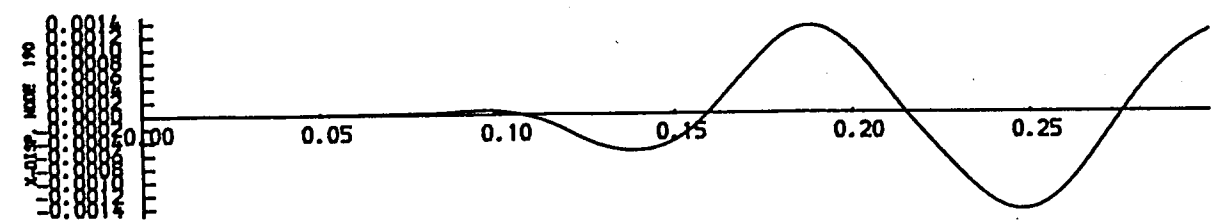
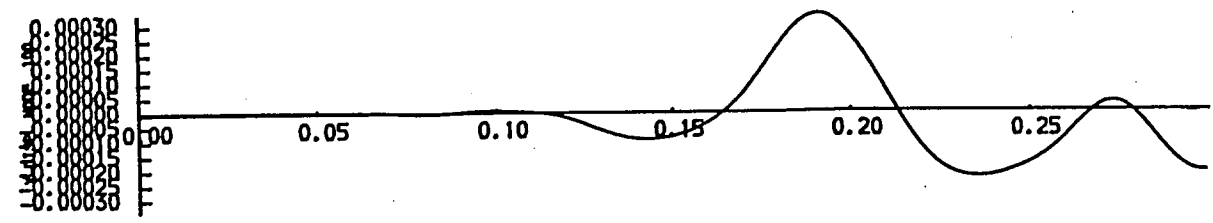


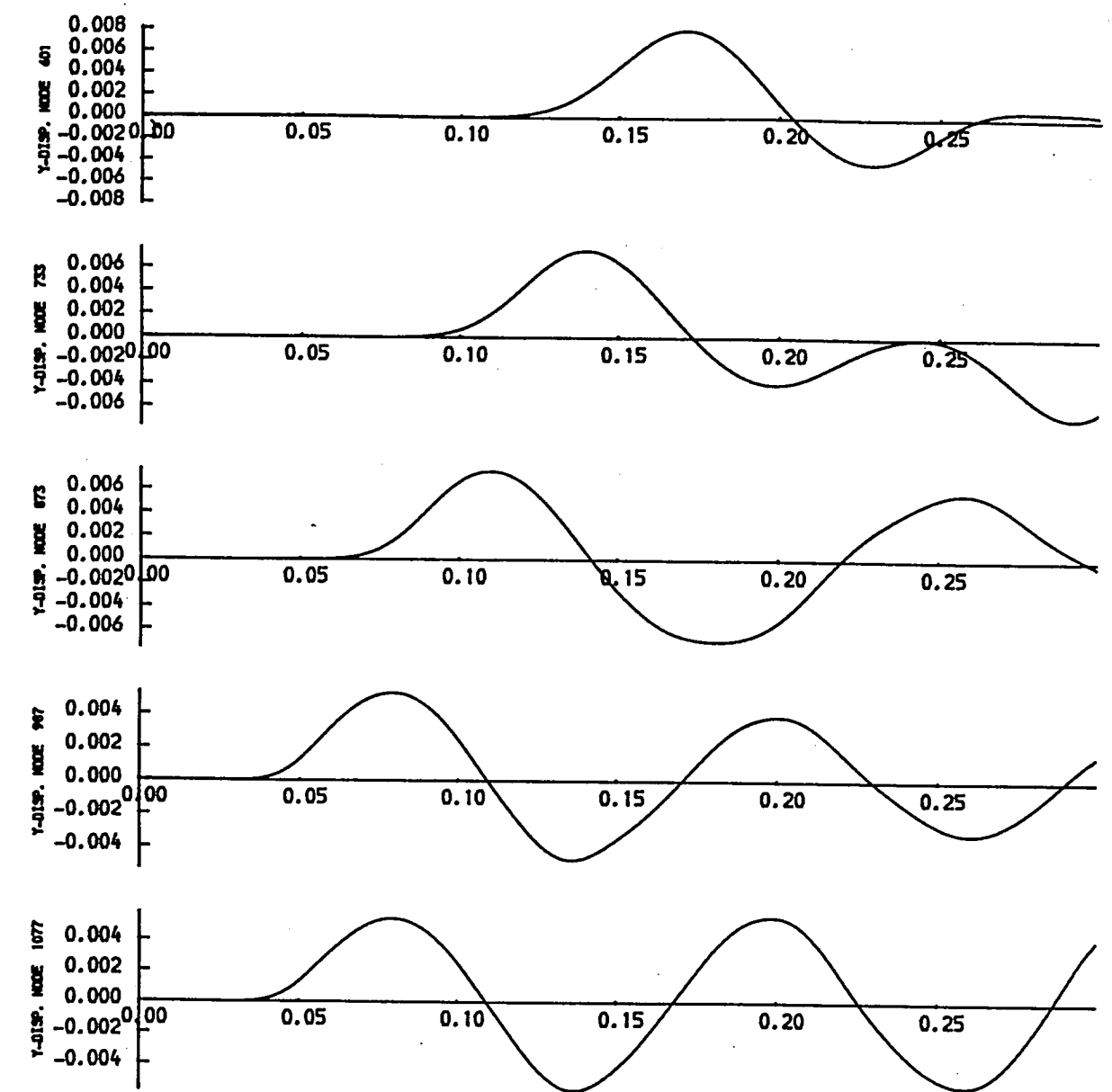
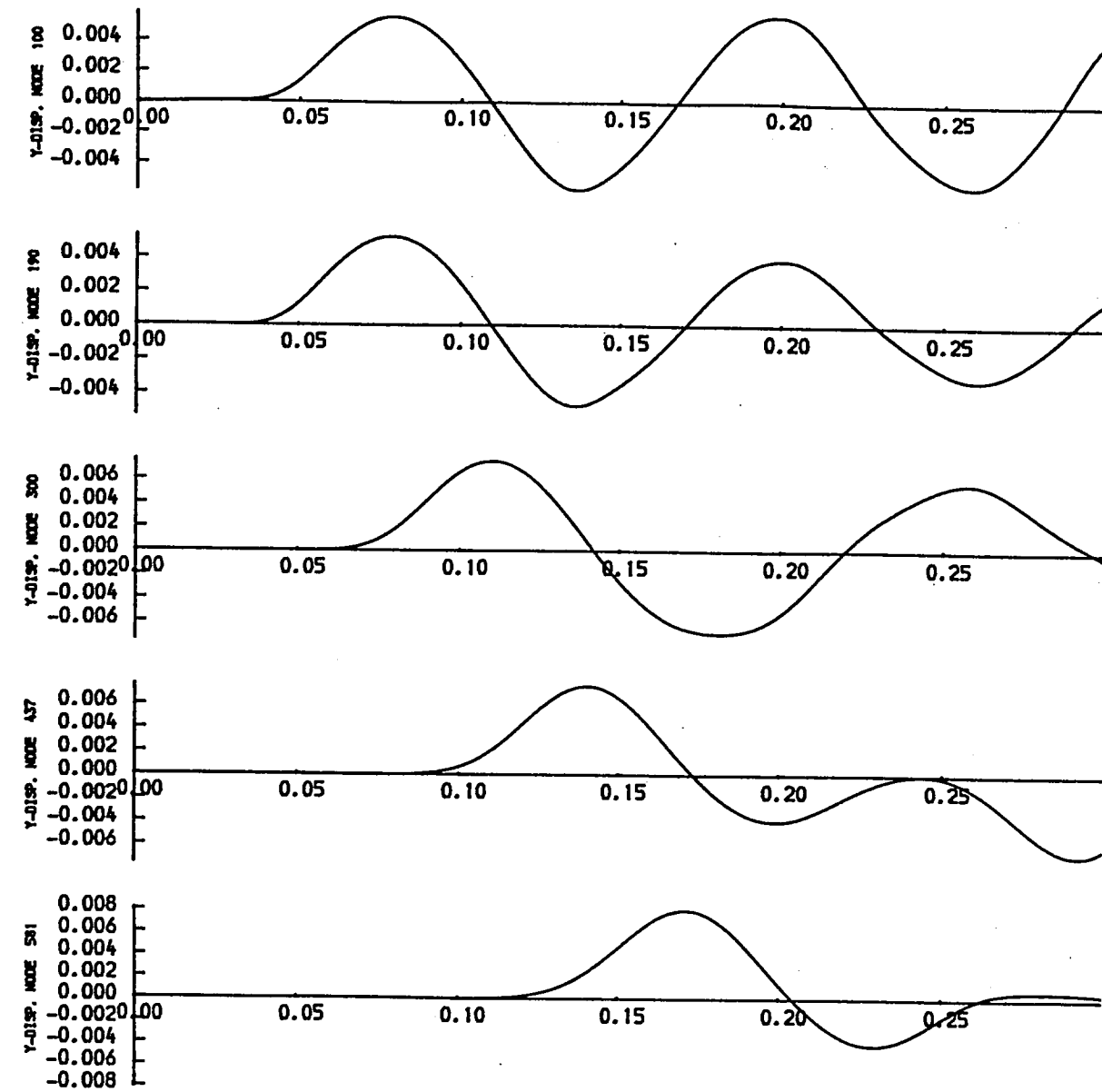
Time-displacement graphs and stress distributions for $D/2$

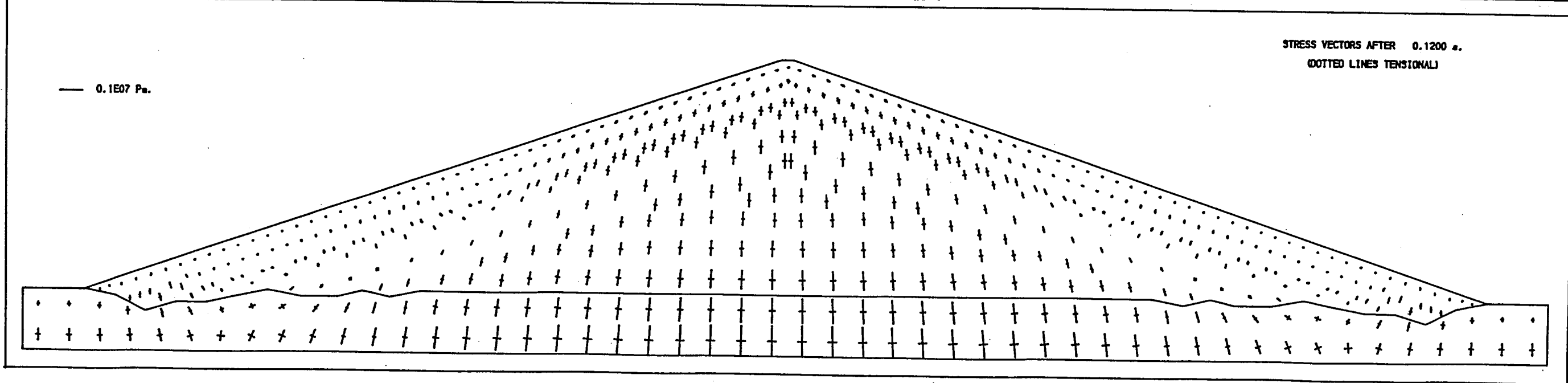
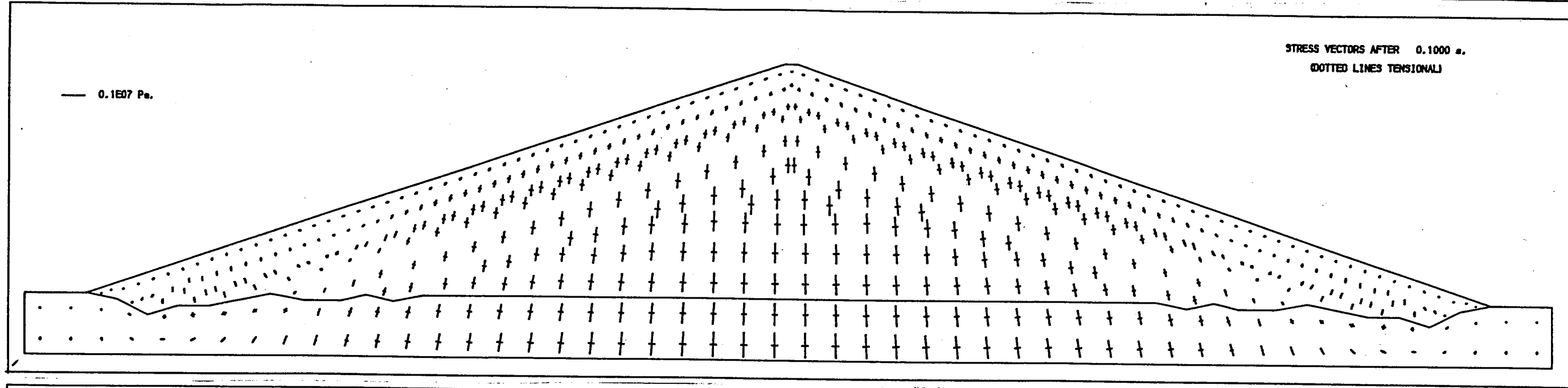
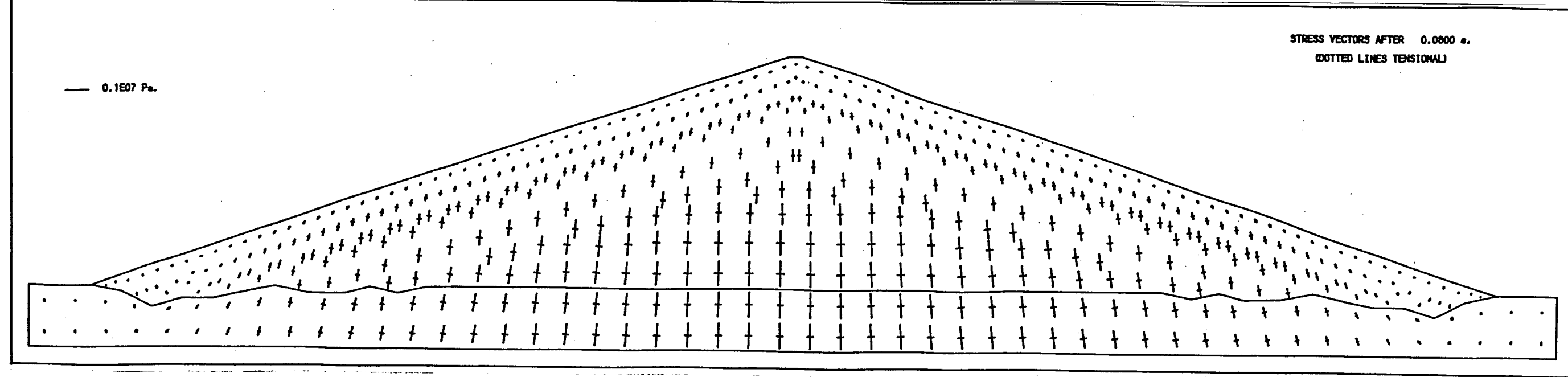
P-wave

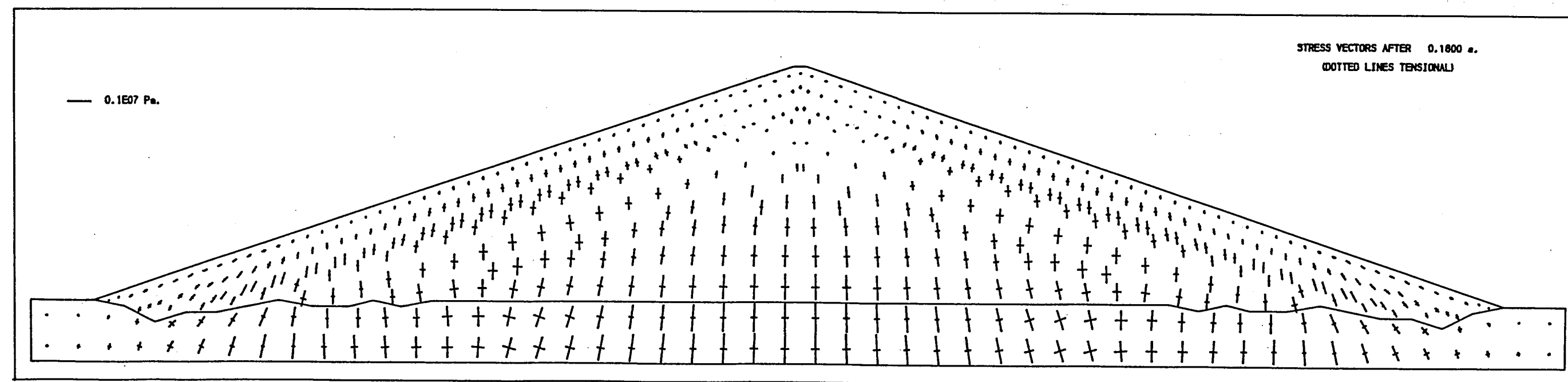
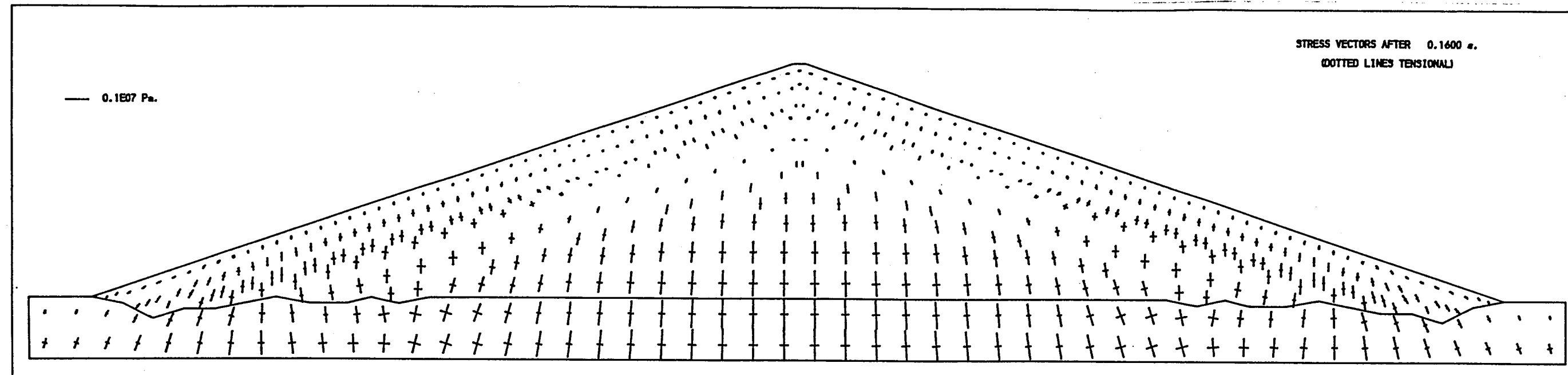
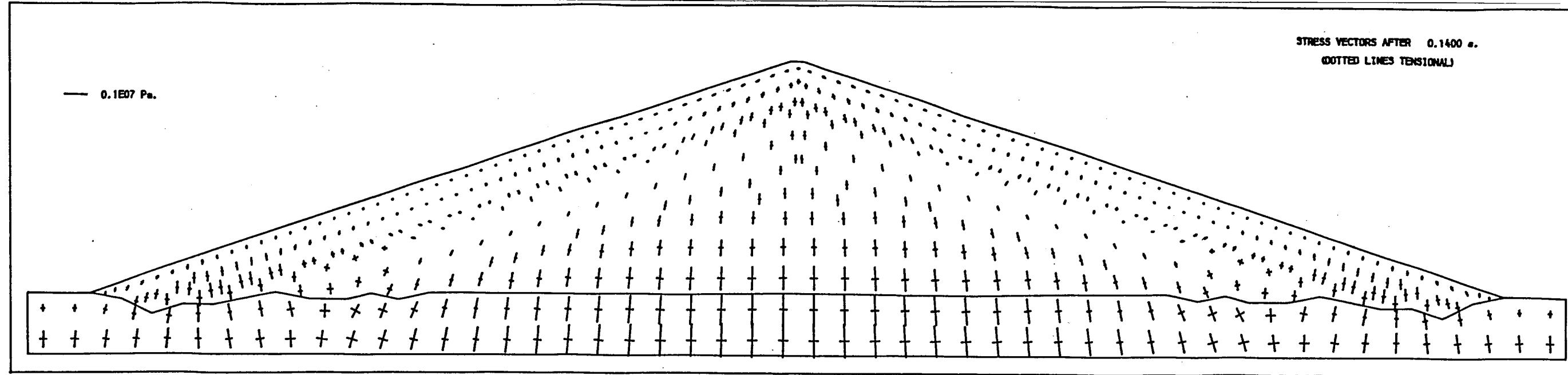
Angle of incidence 0°

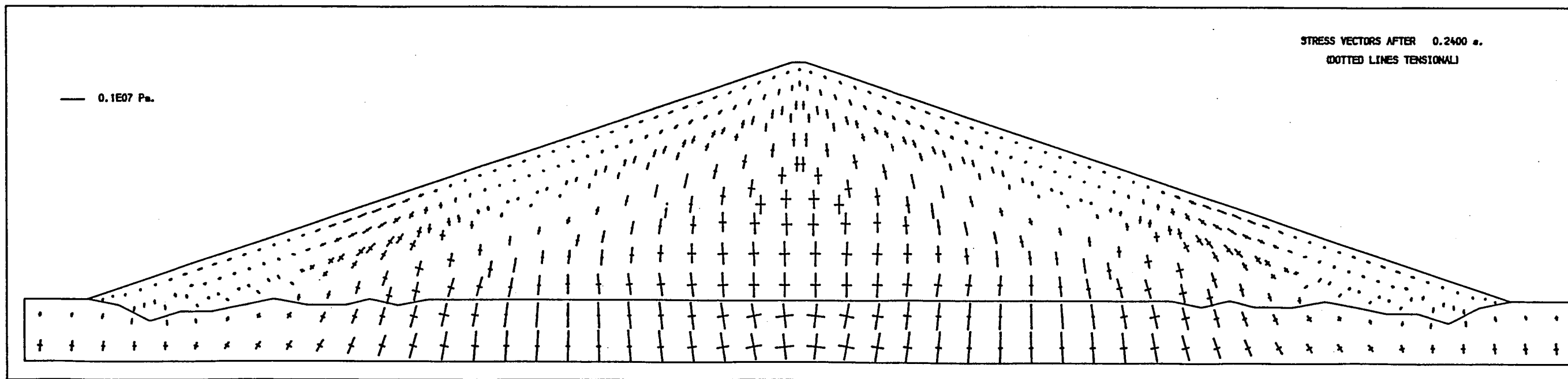
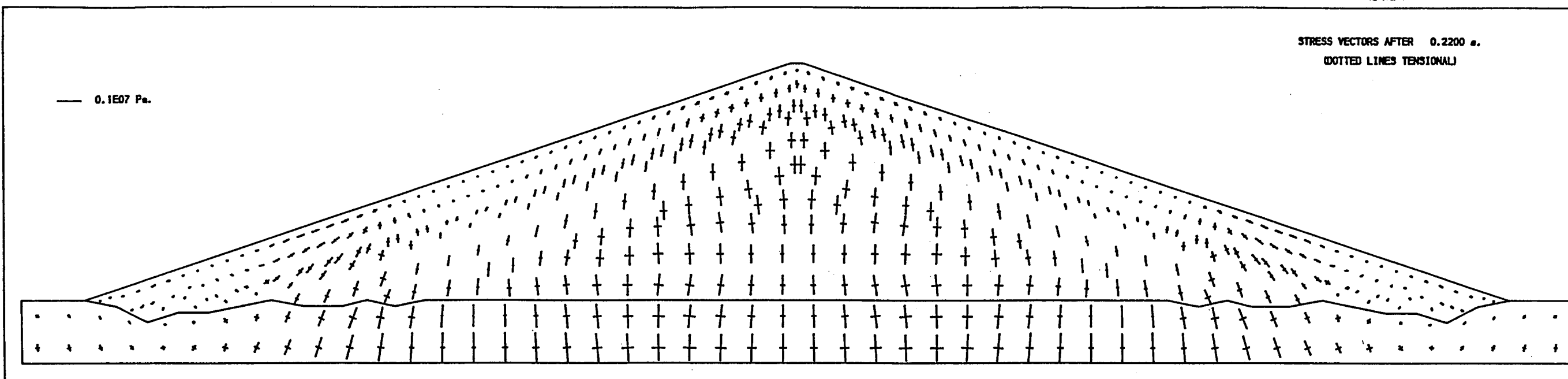
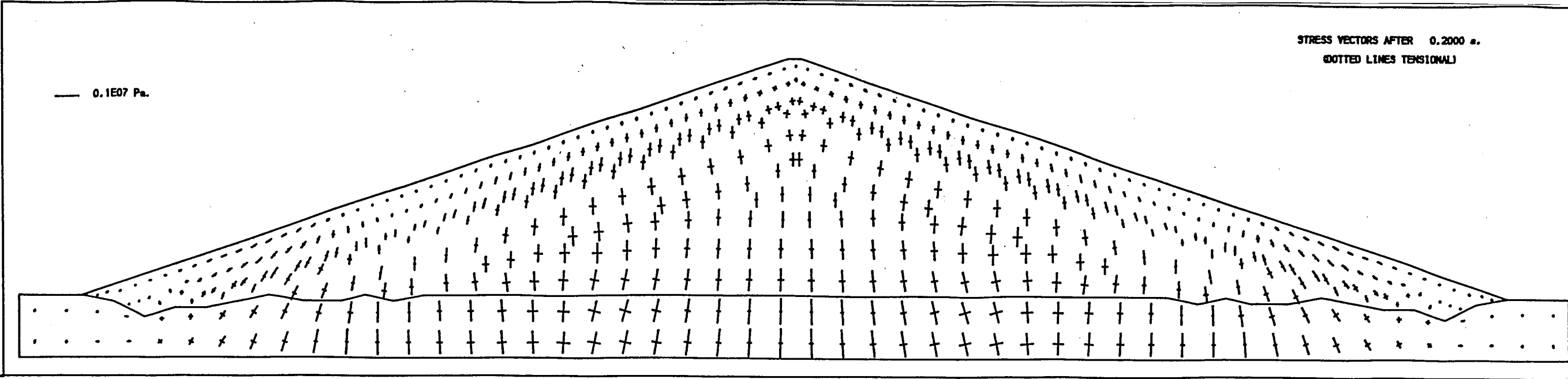
Base acceleration $\frac{1}{2}g$

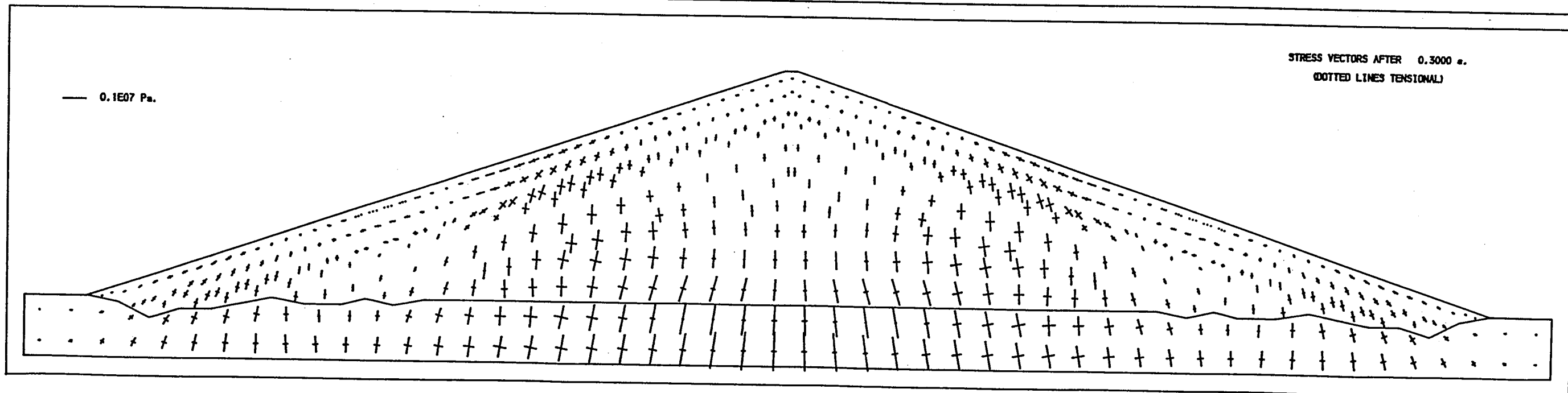
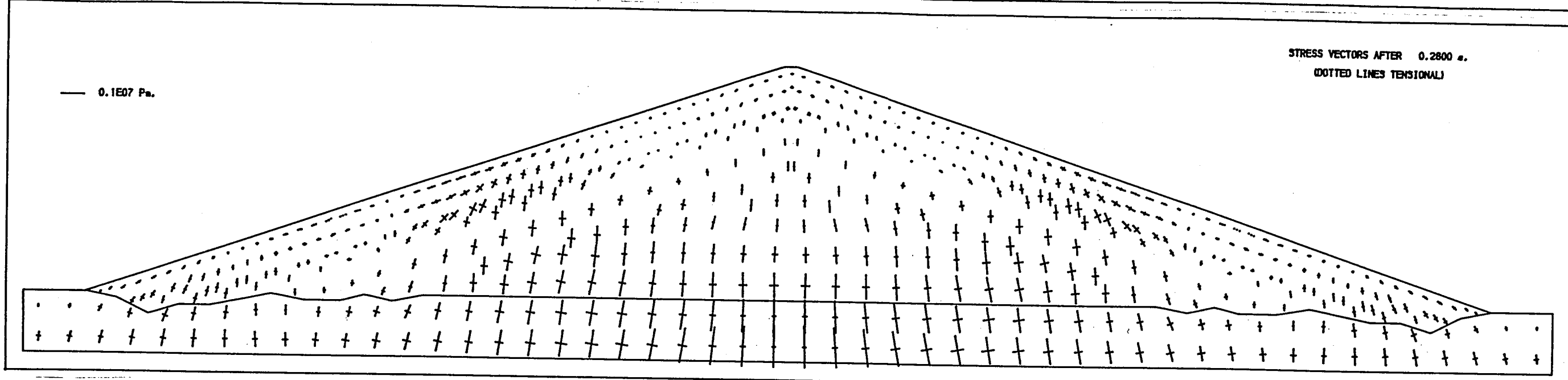
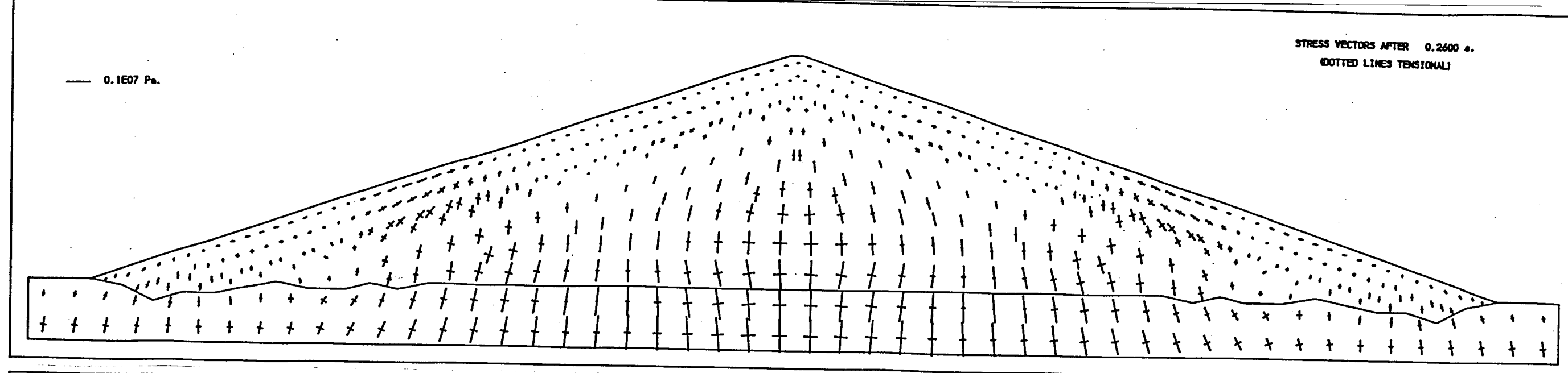










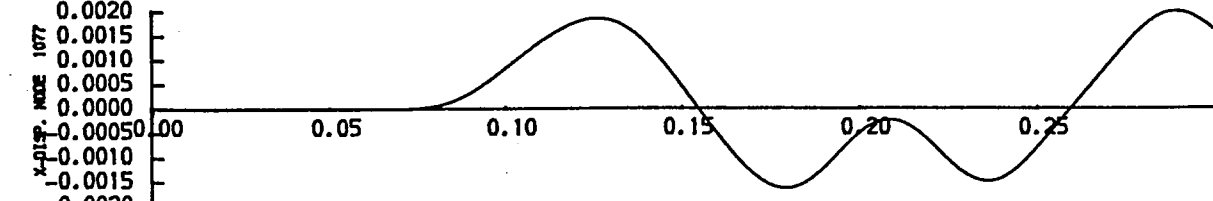
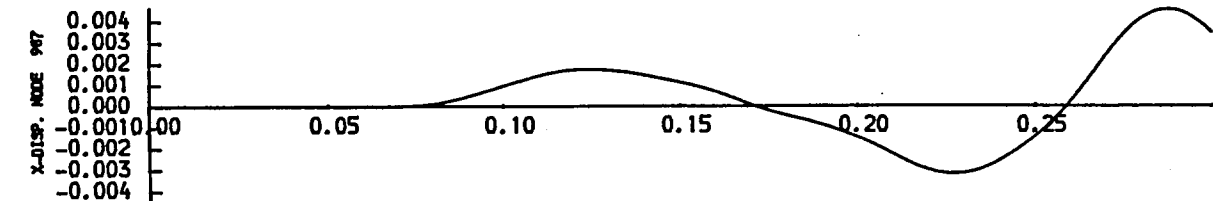
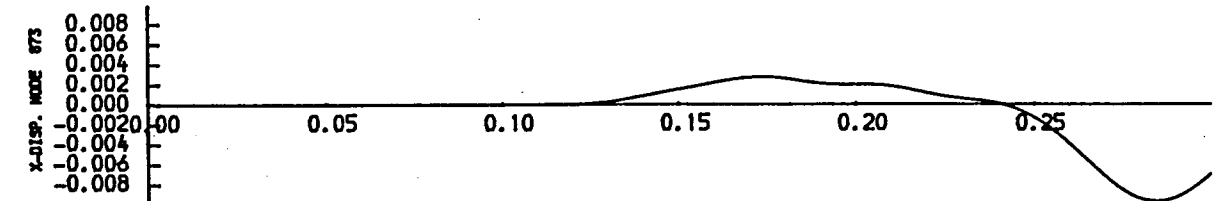
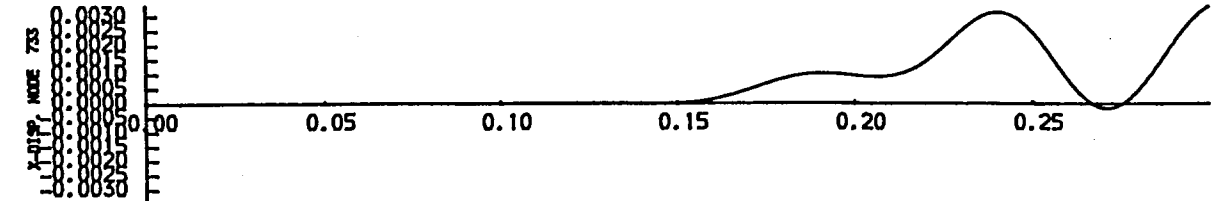
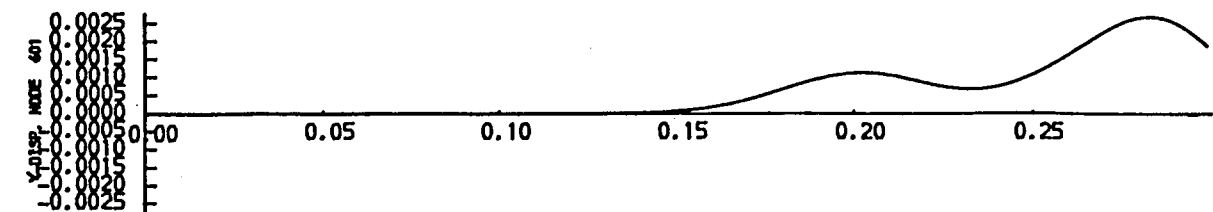
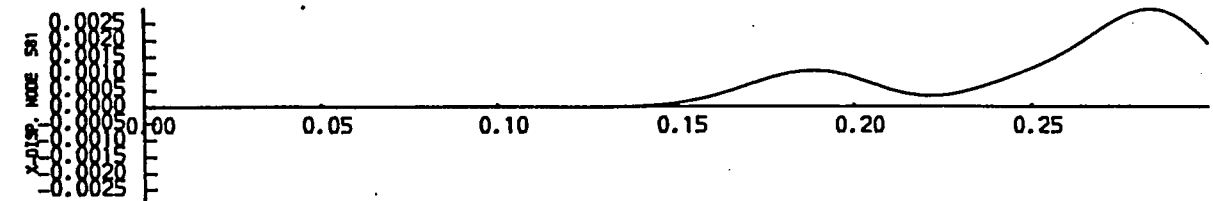
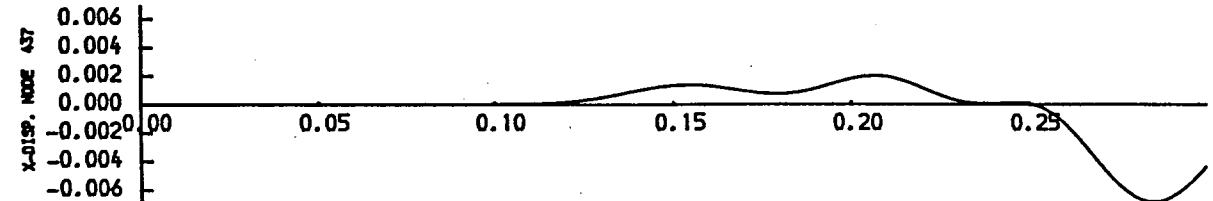
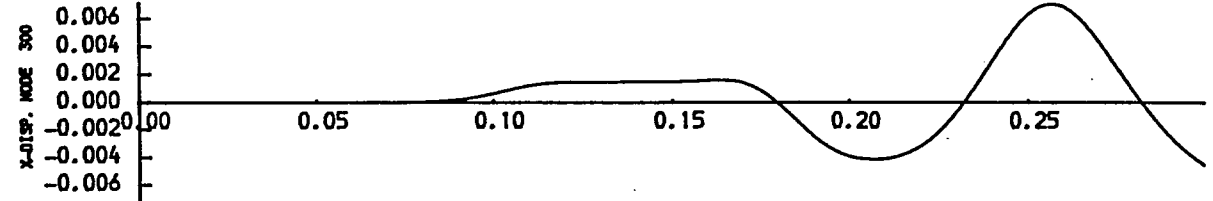
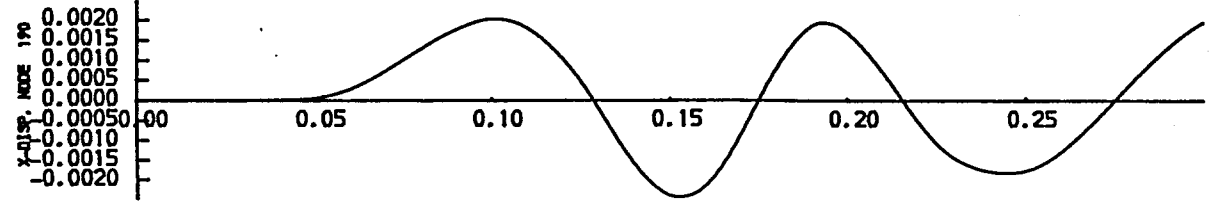
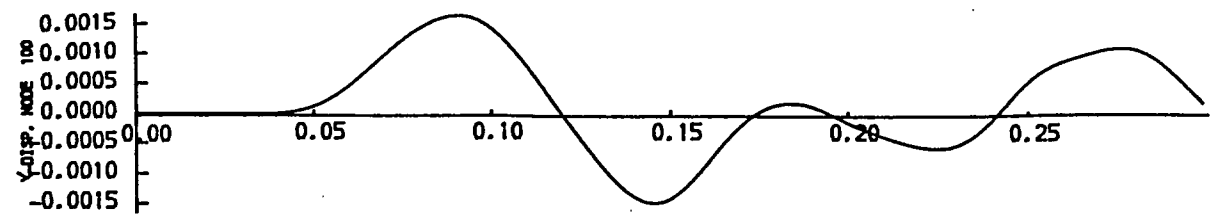


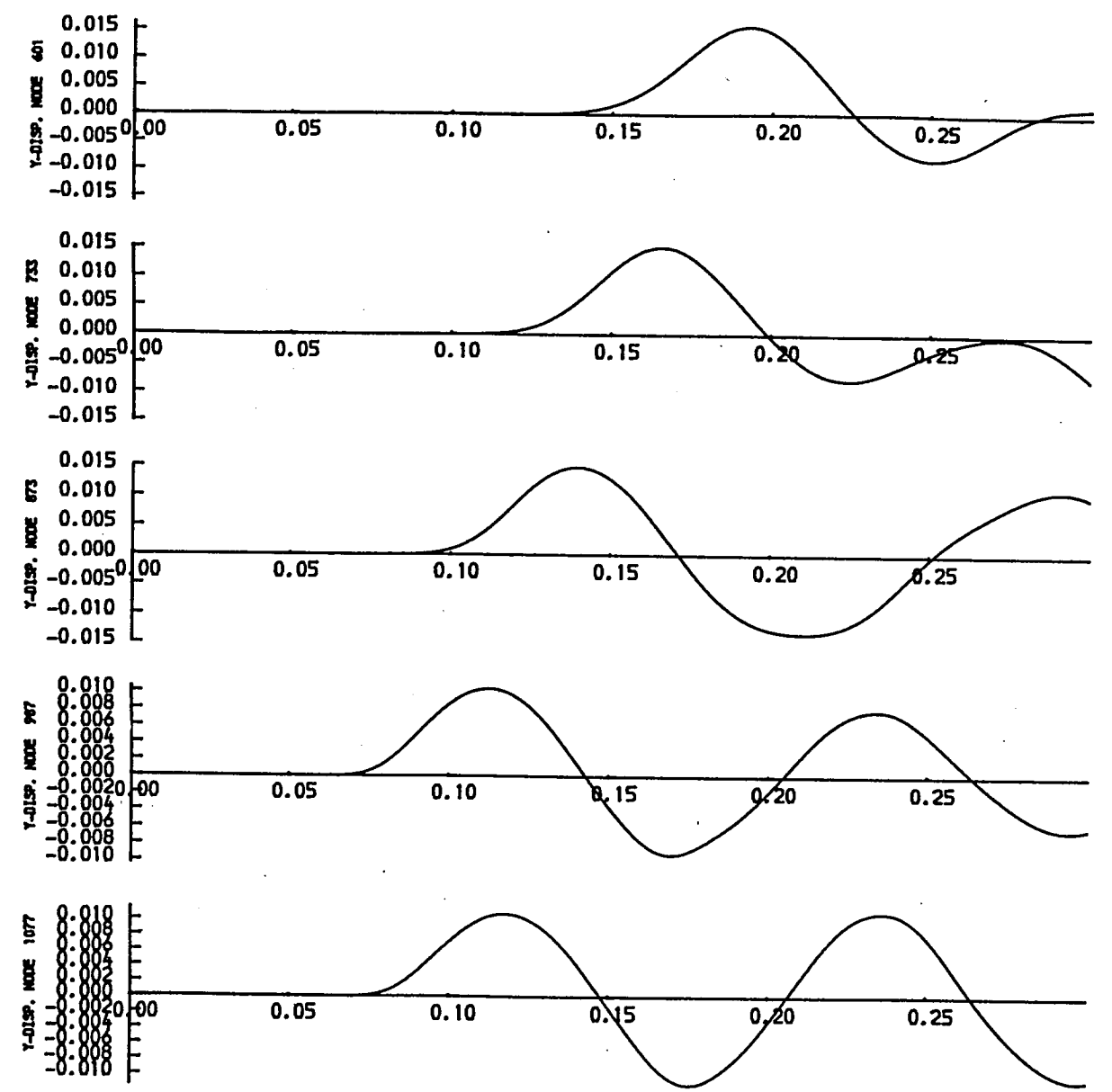
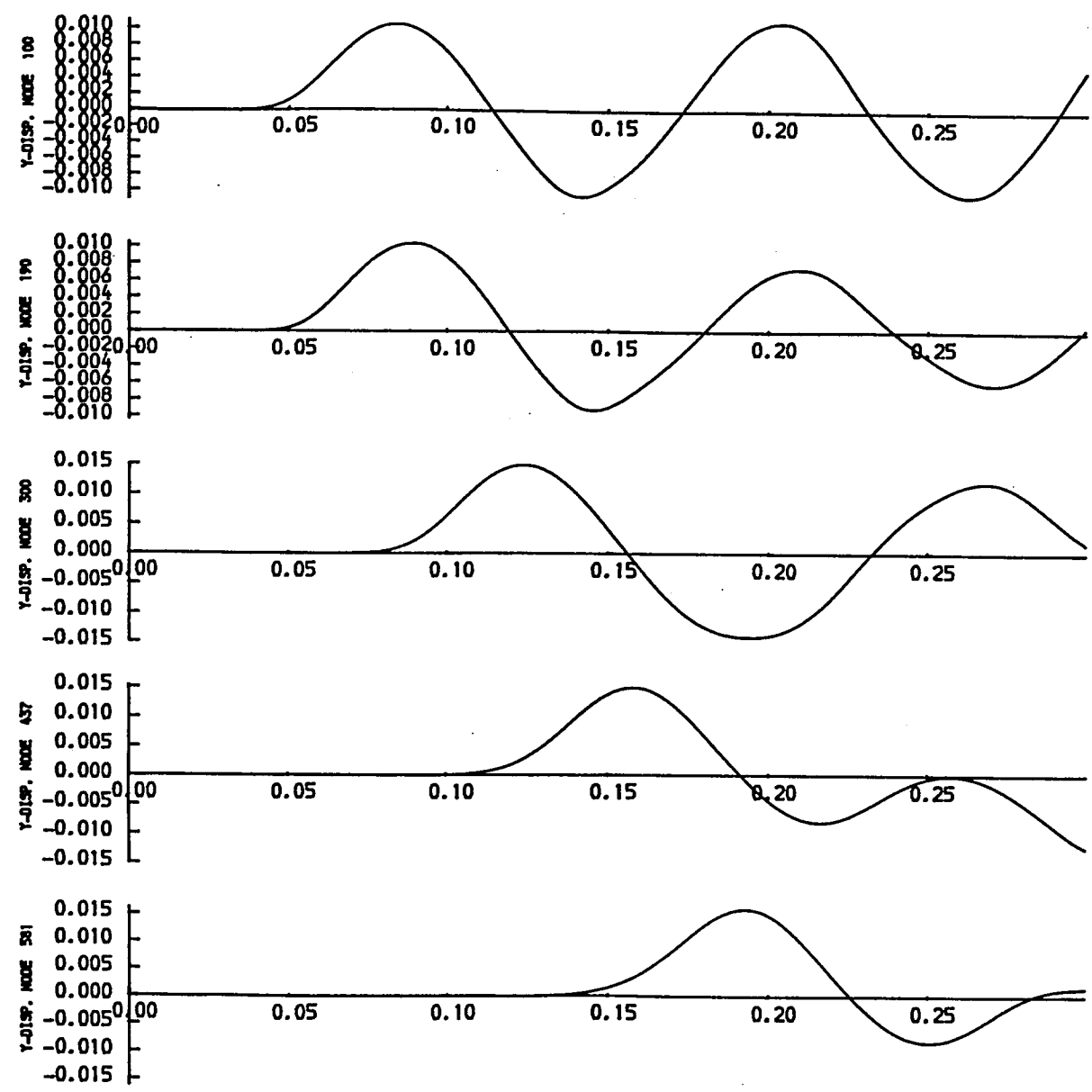
Time-displacement graphs and stress distributions for D2/3

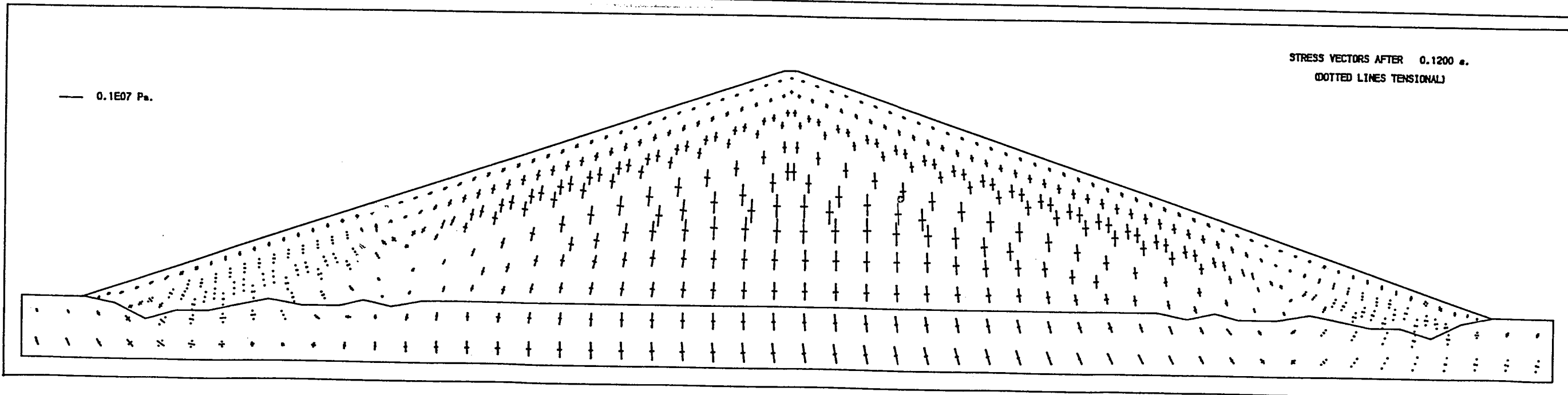
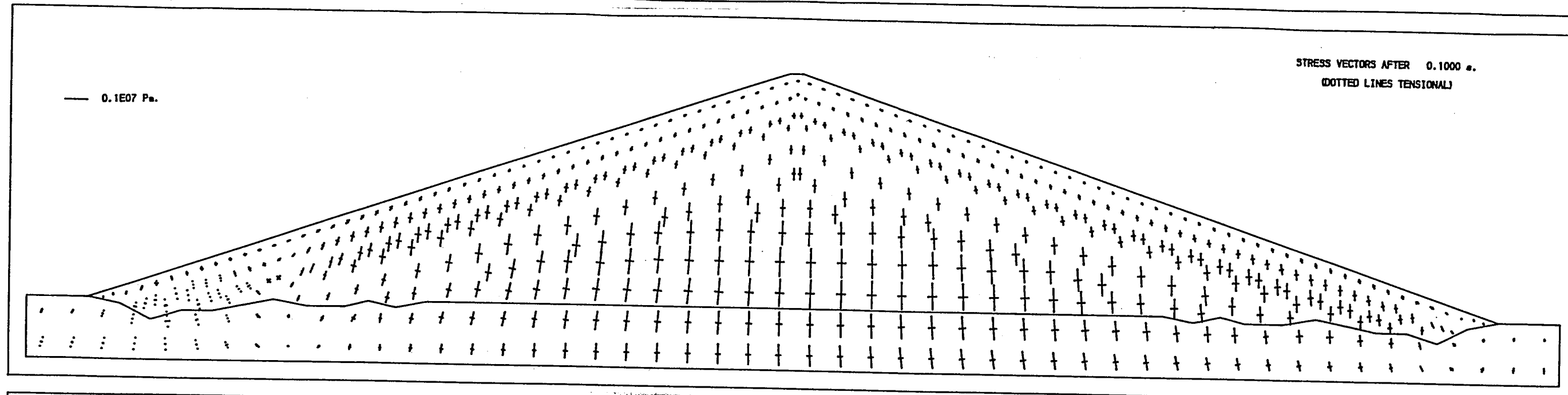
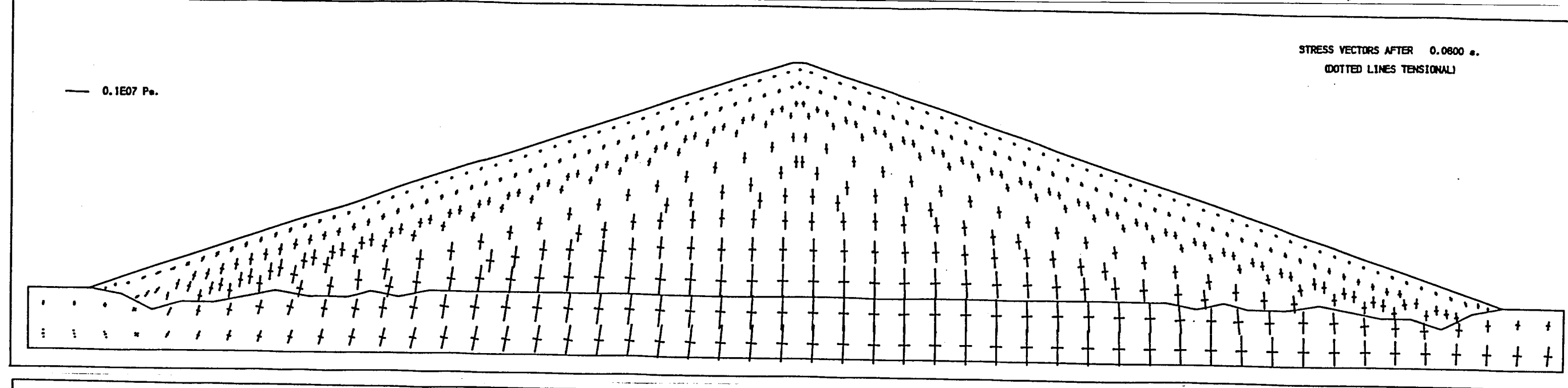
P-wave

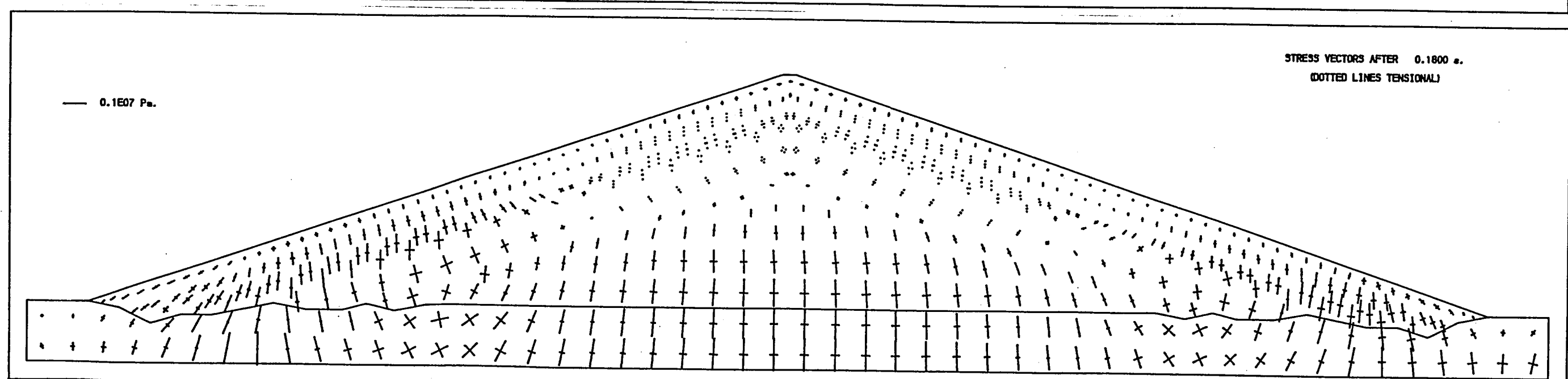
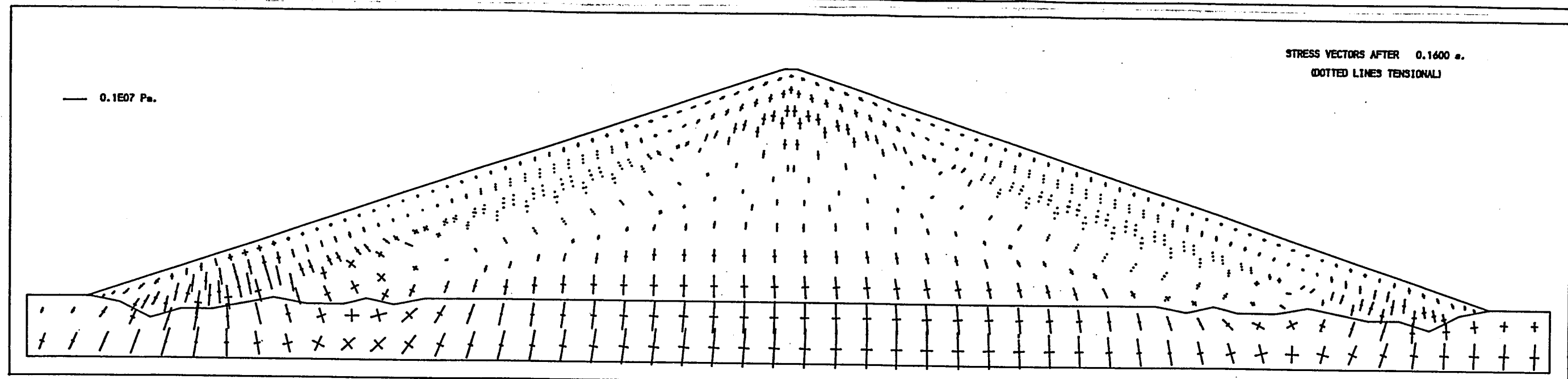
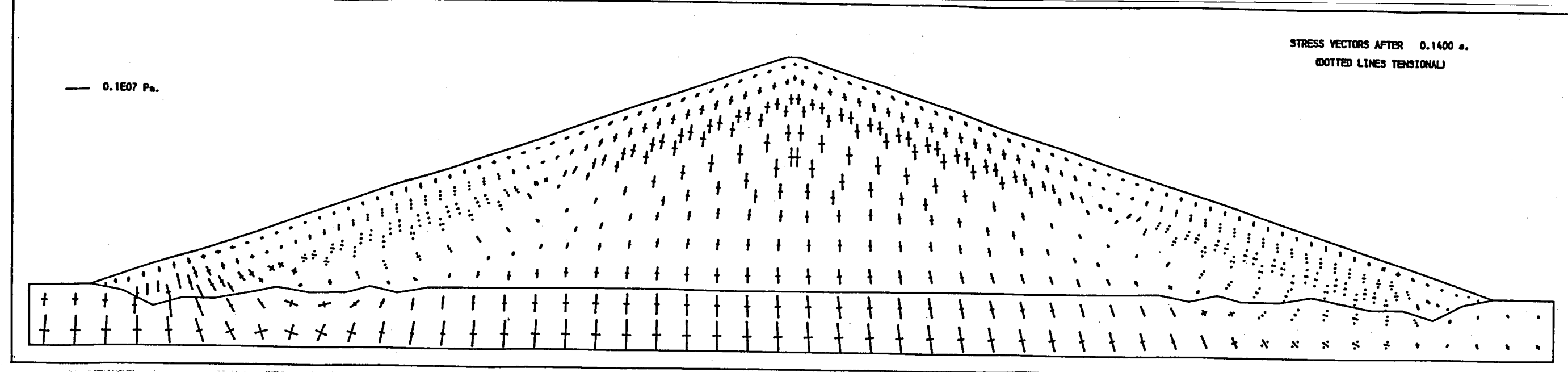
Angle of incidence 10°

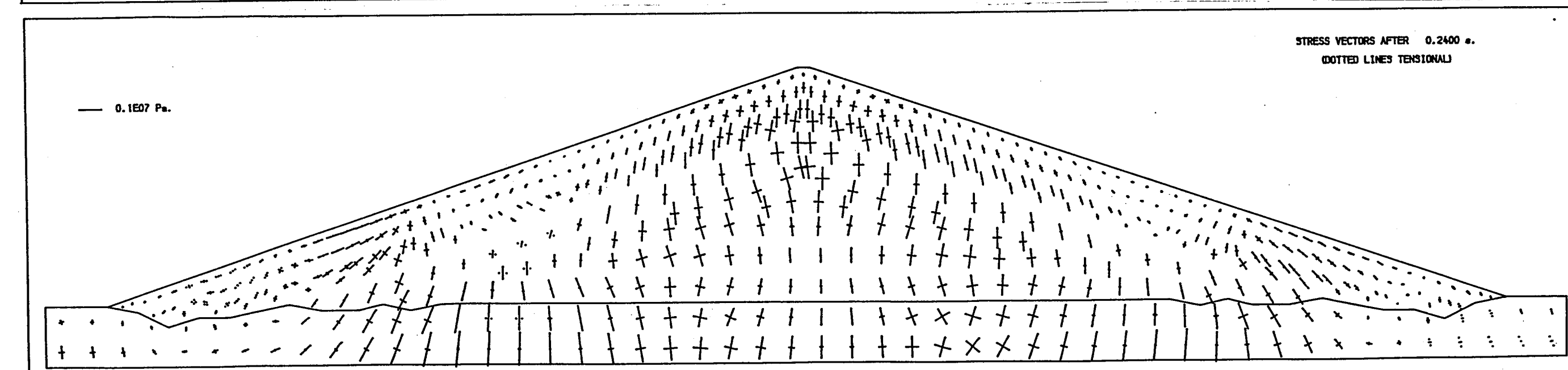
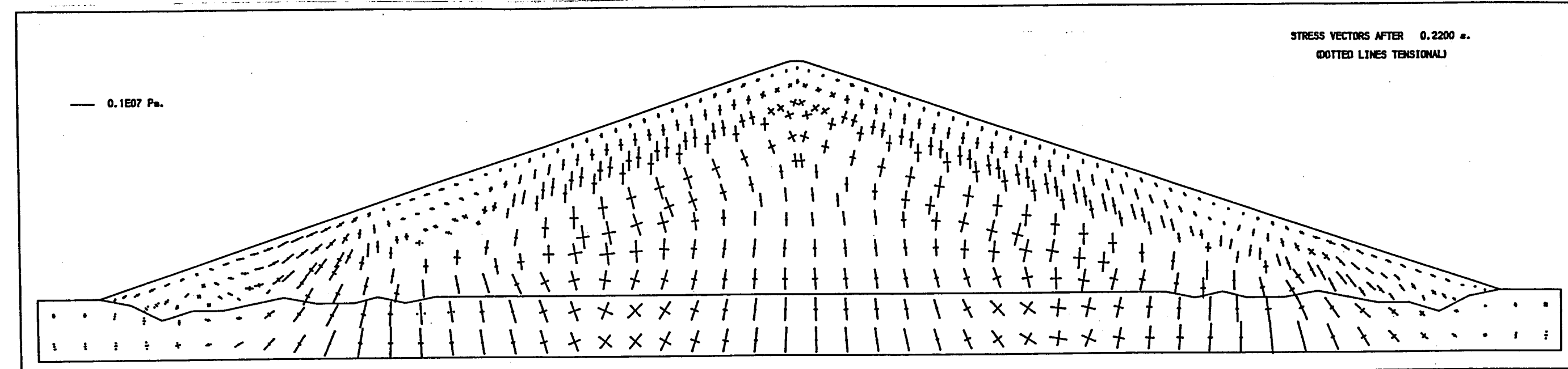
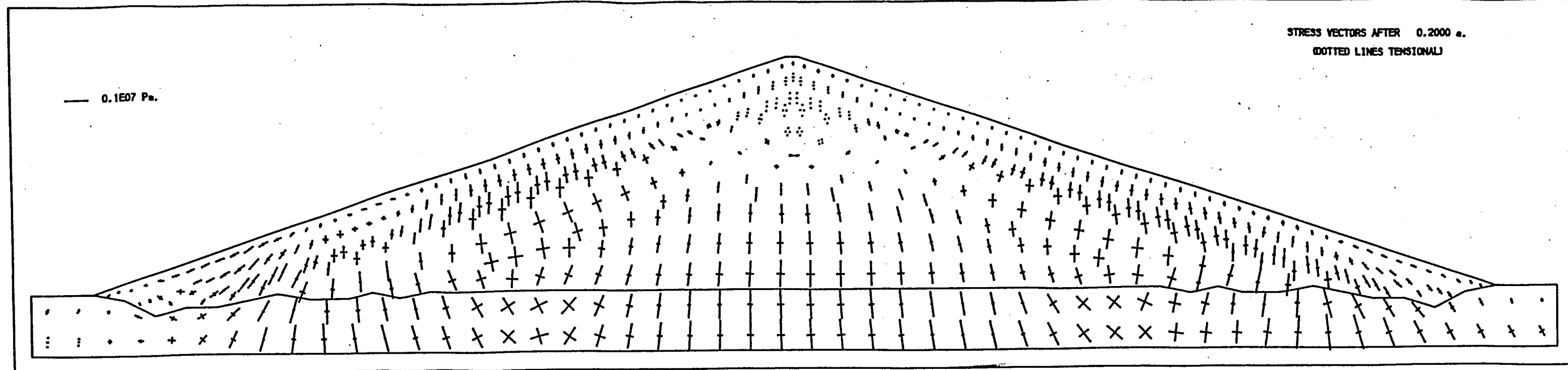
Base acceleration g

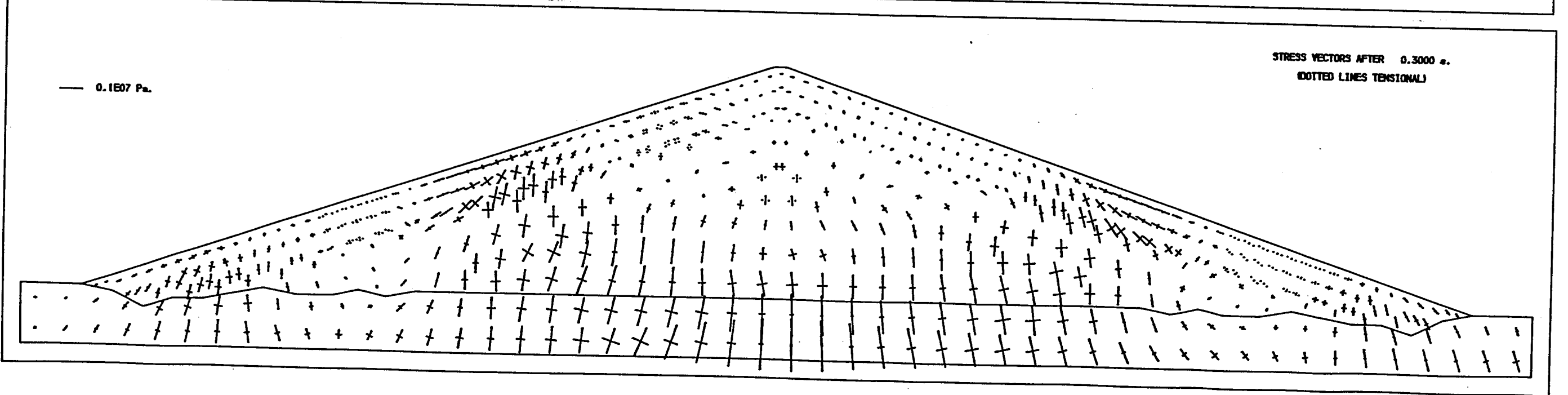
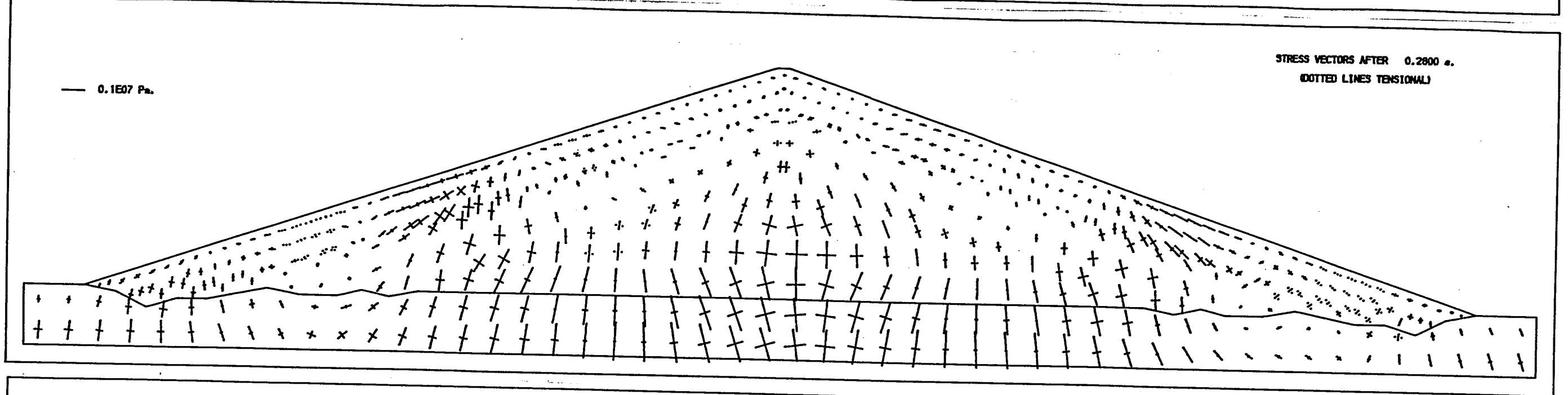
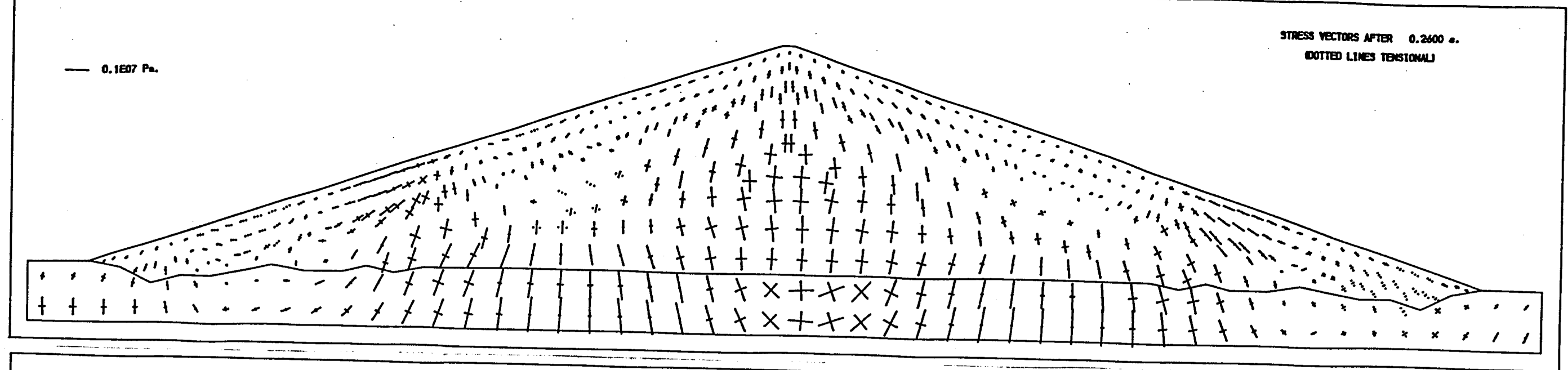










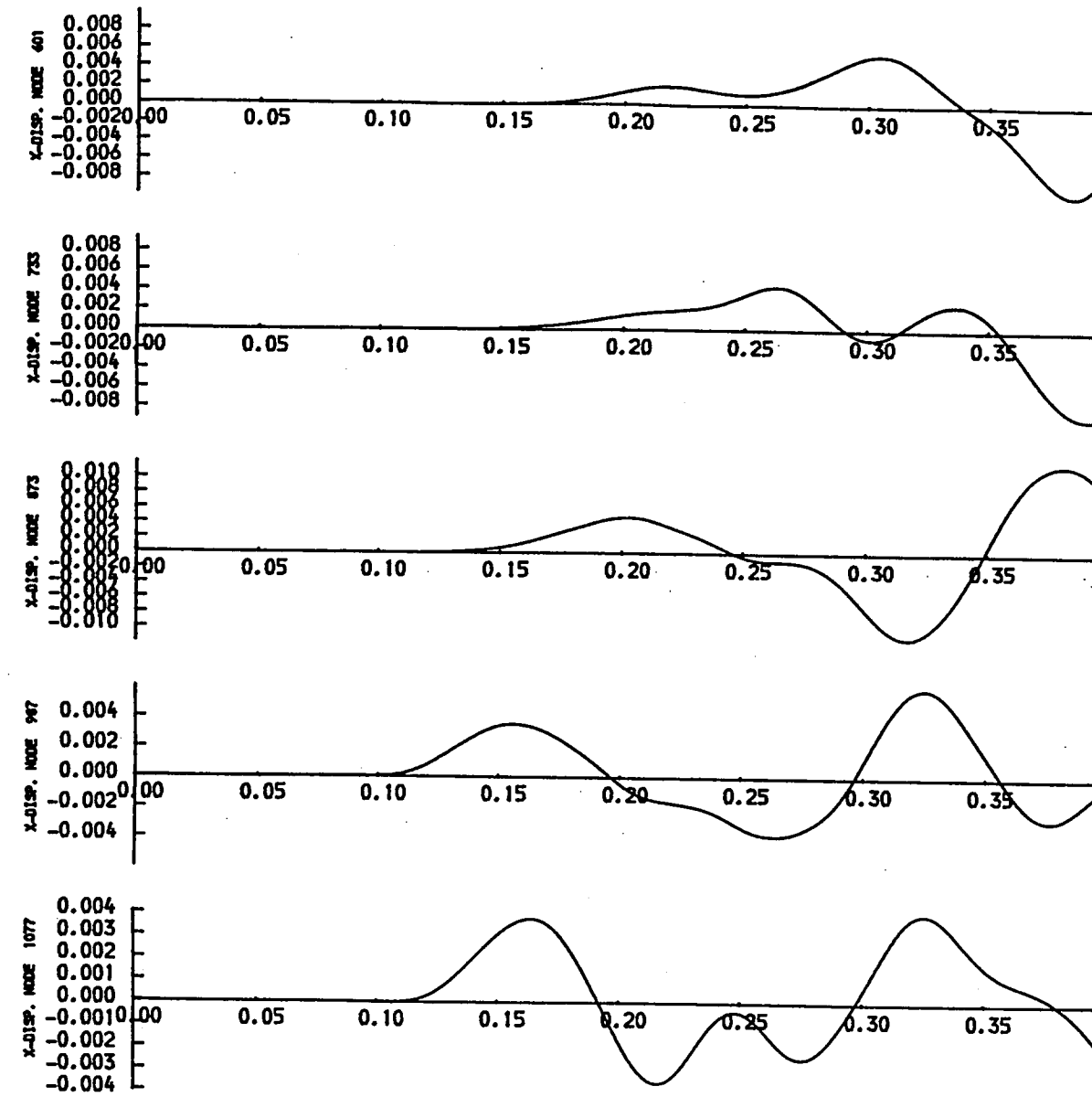
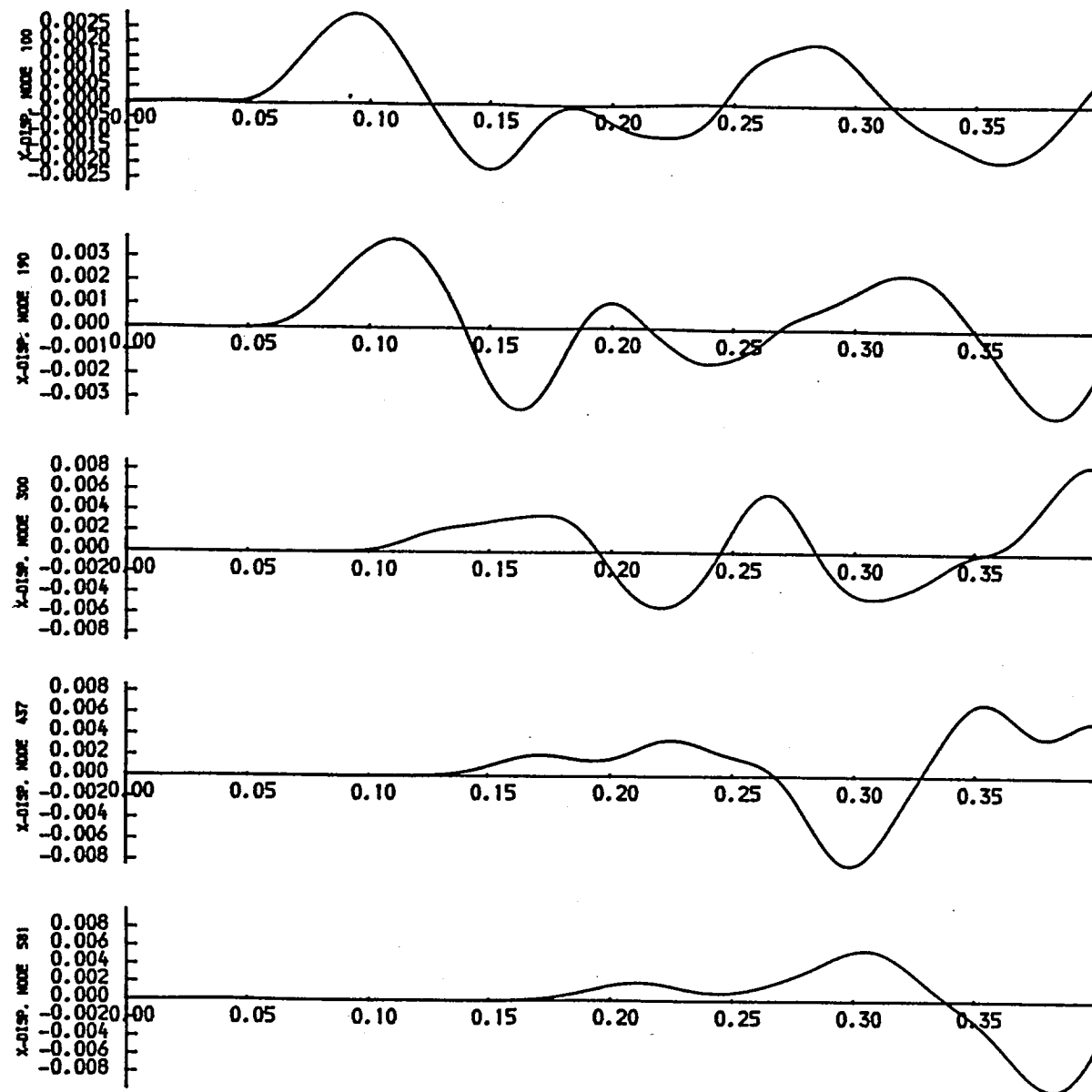


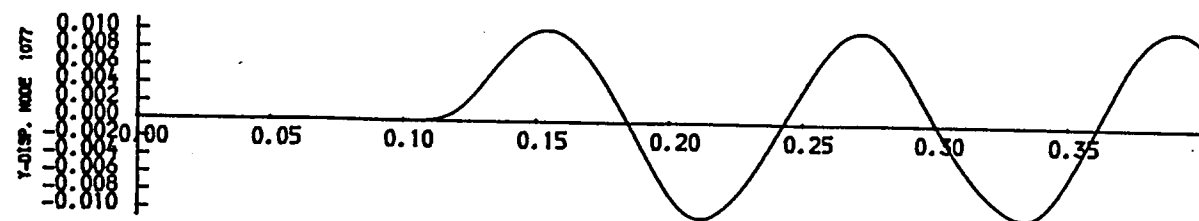
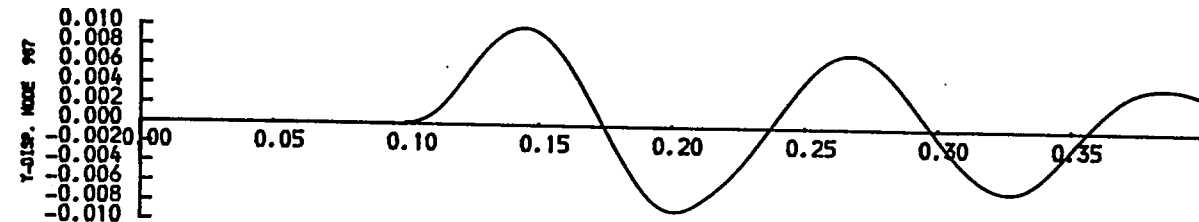
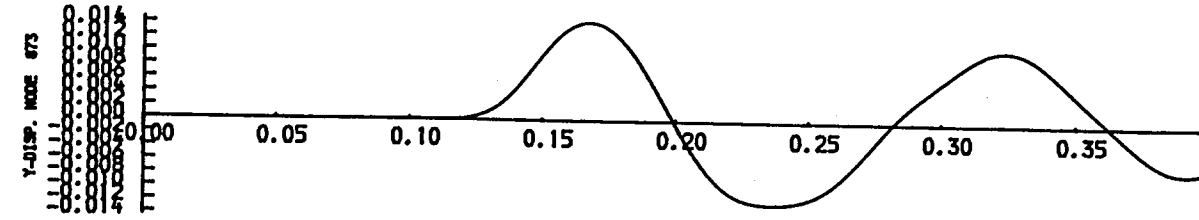
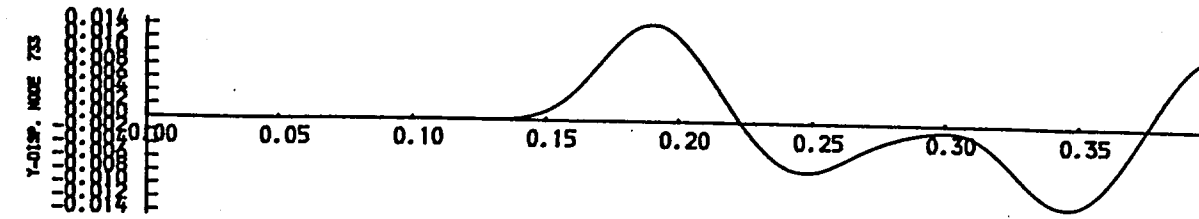
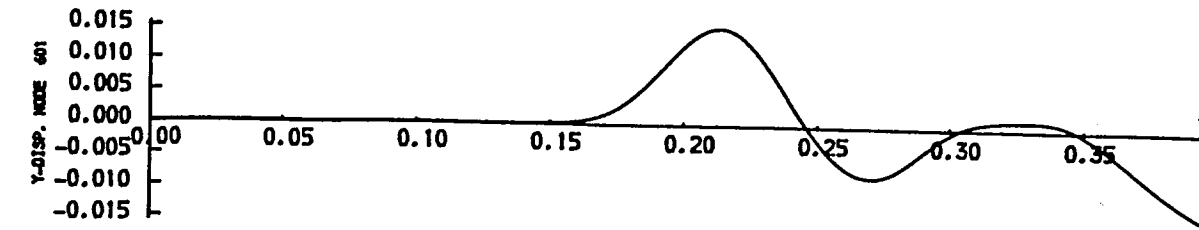
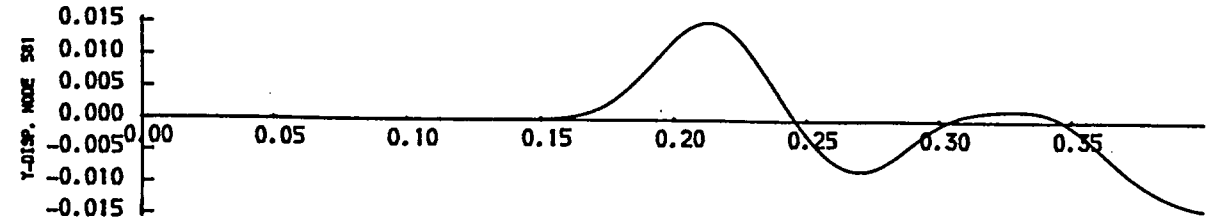
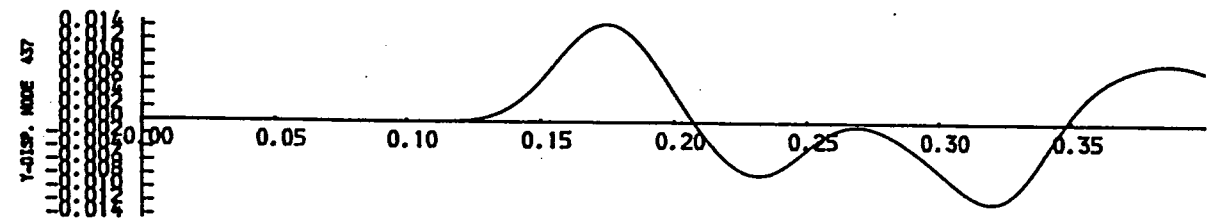
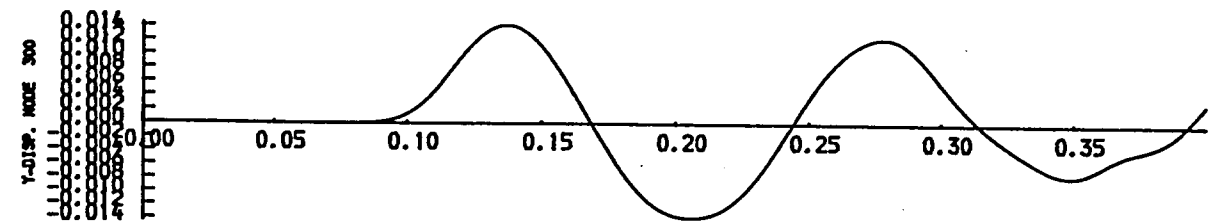
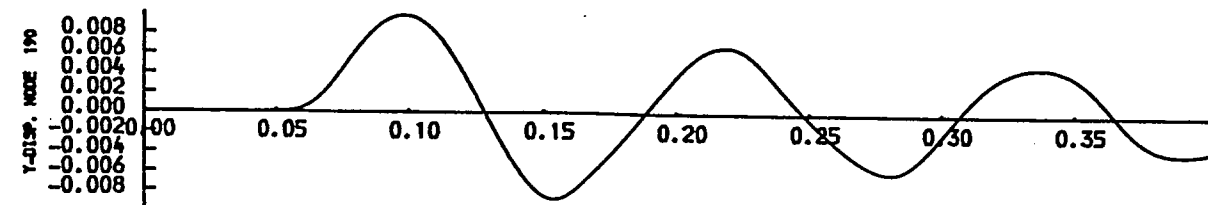
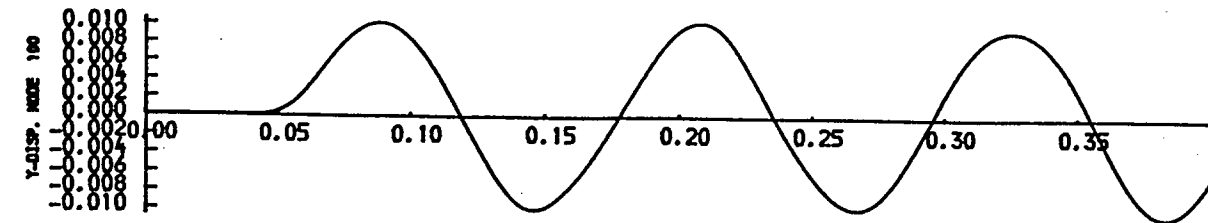
Time-displacement graphs and stress distributions for D2 /4

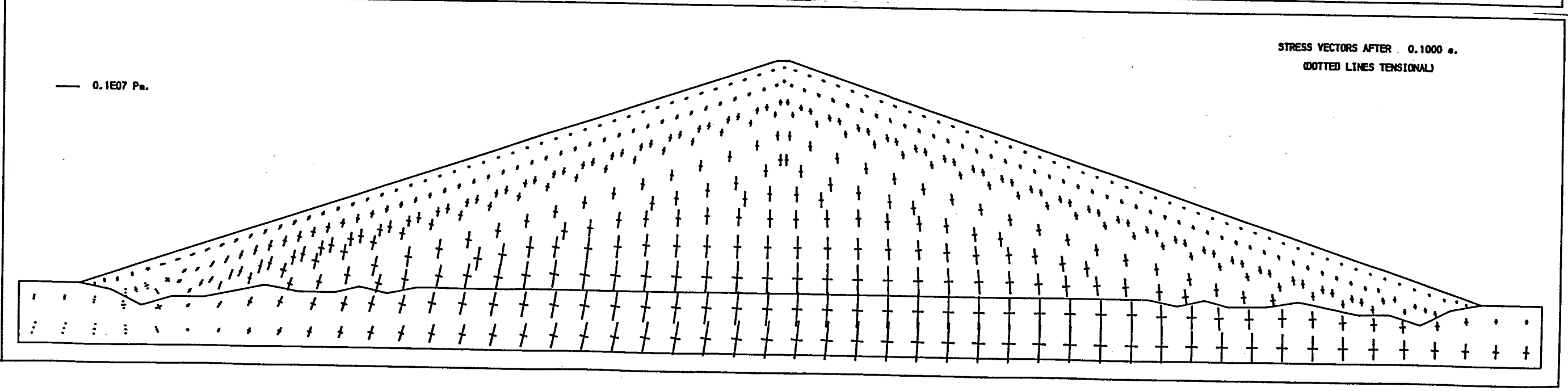
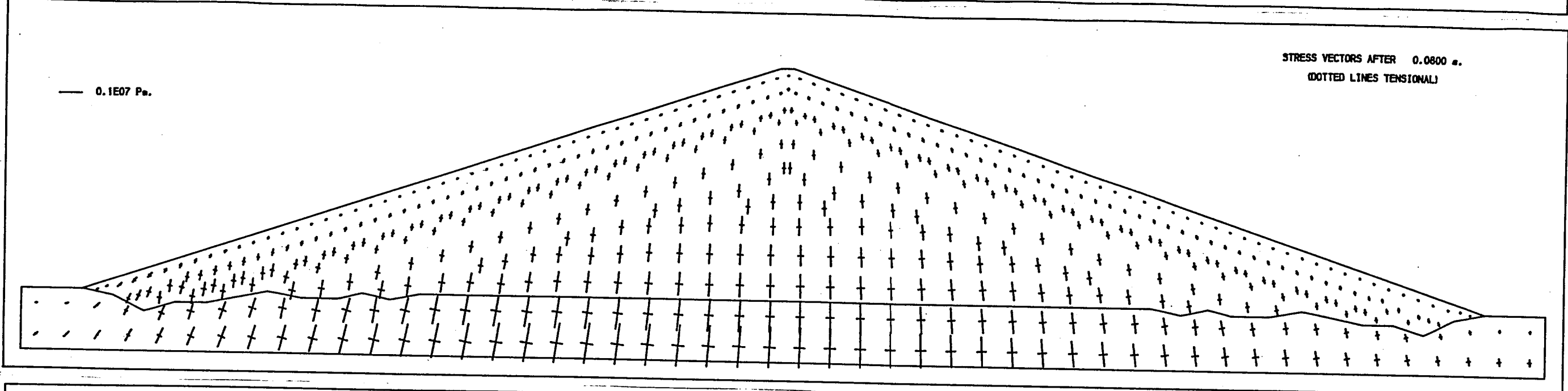
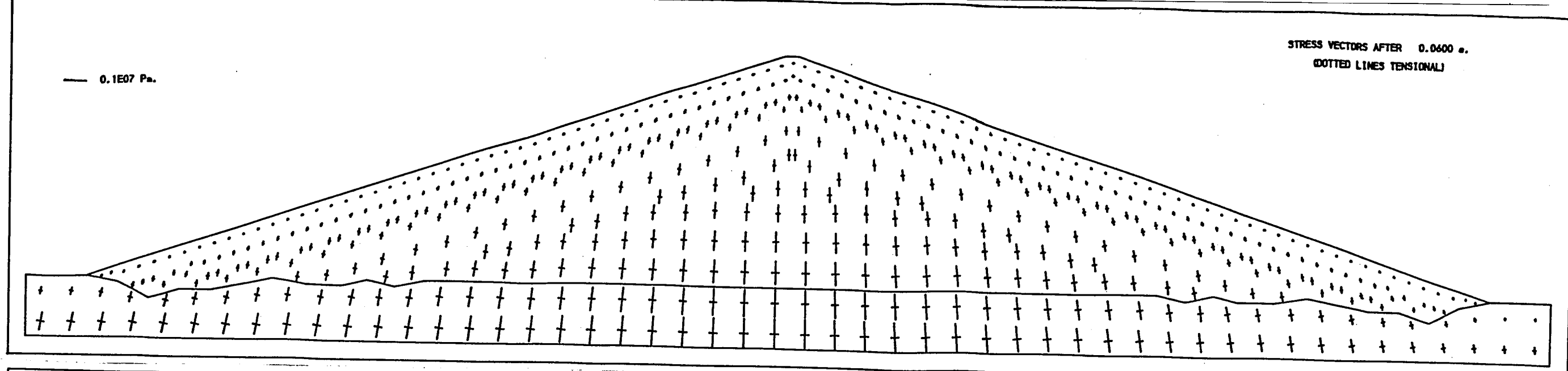
P-wave

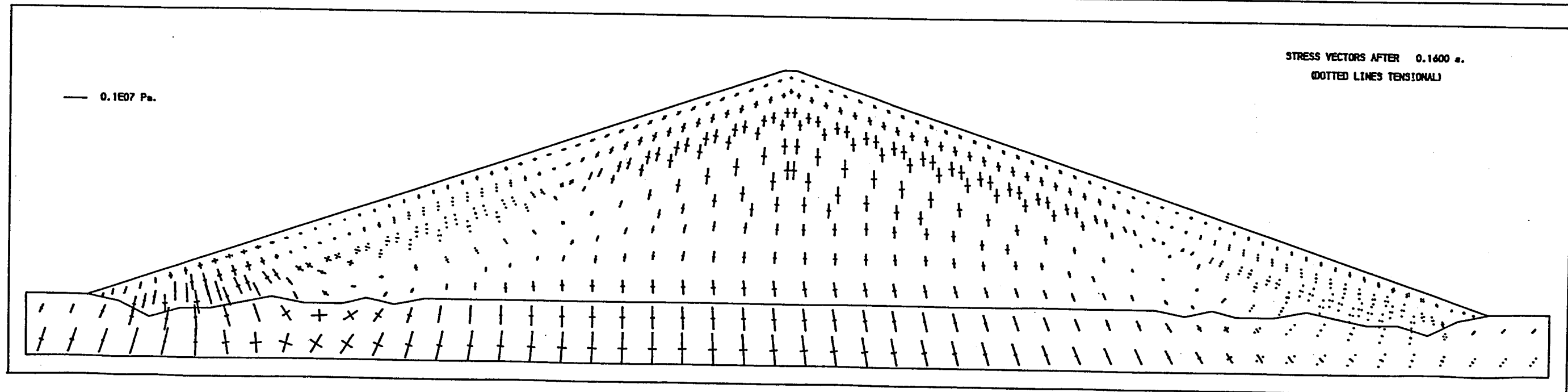
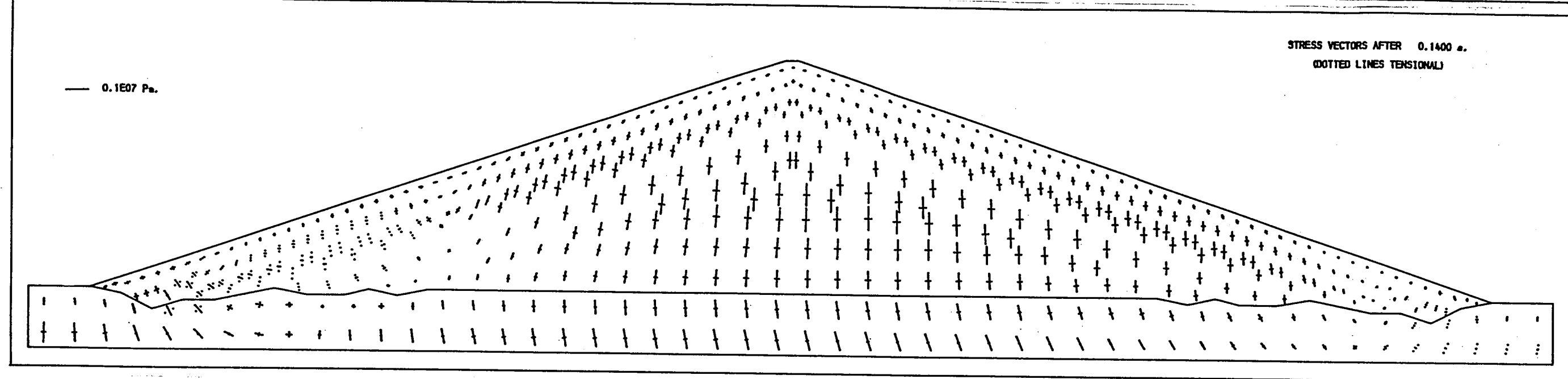
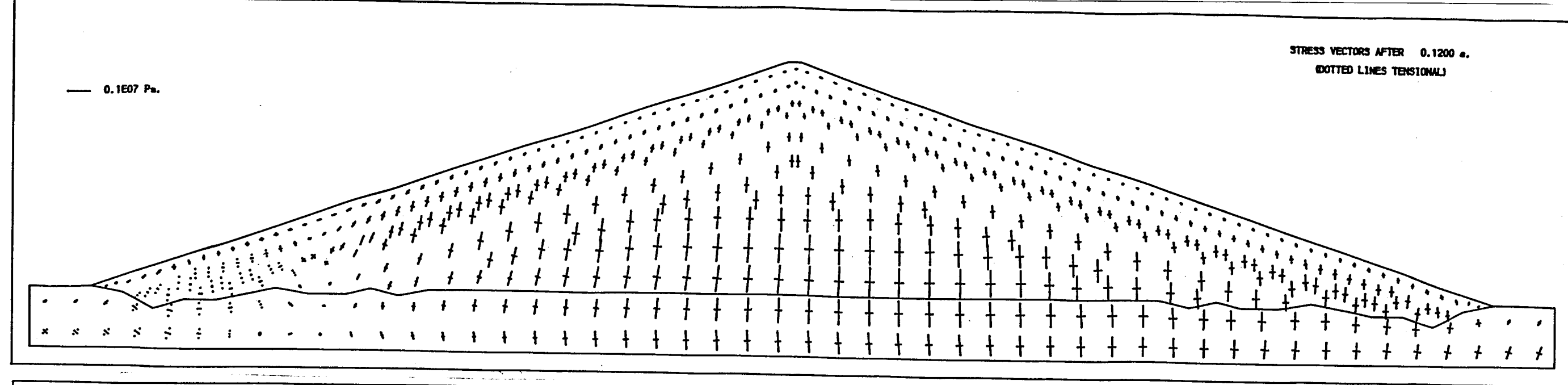
Angle of incidence 20°

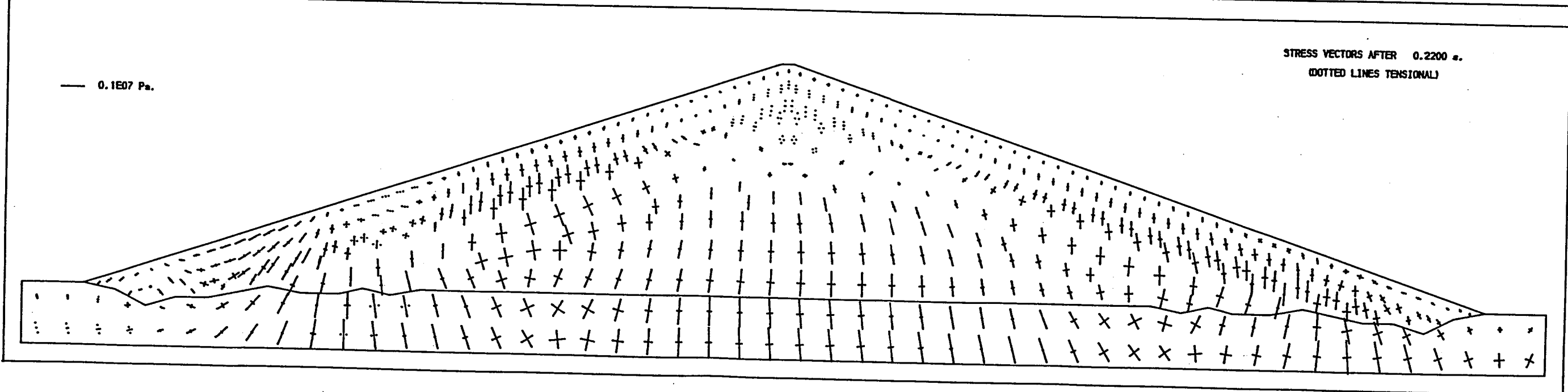
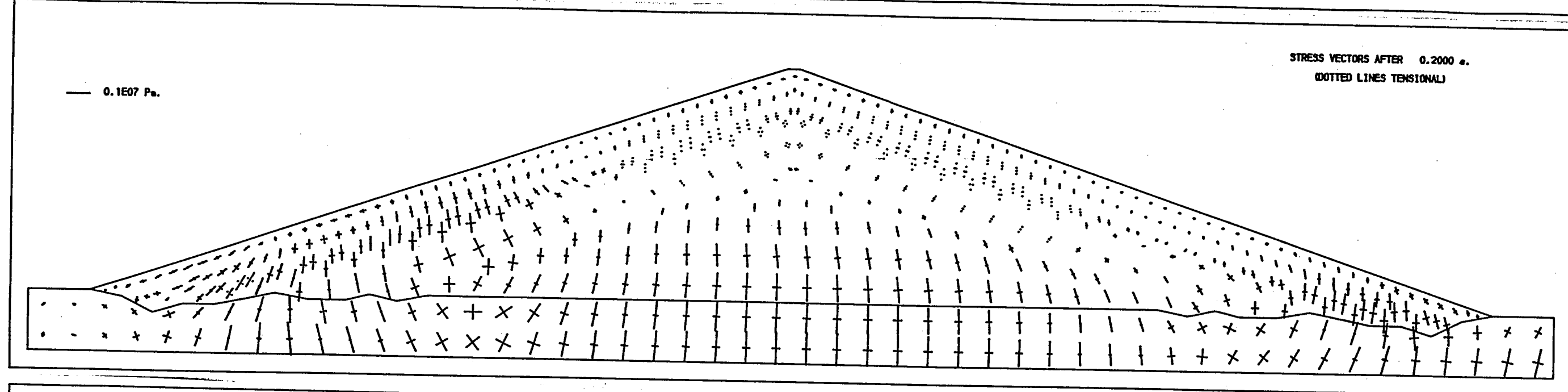
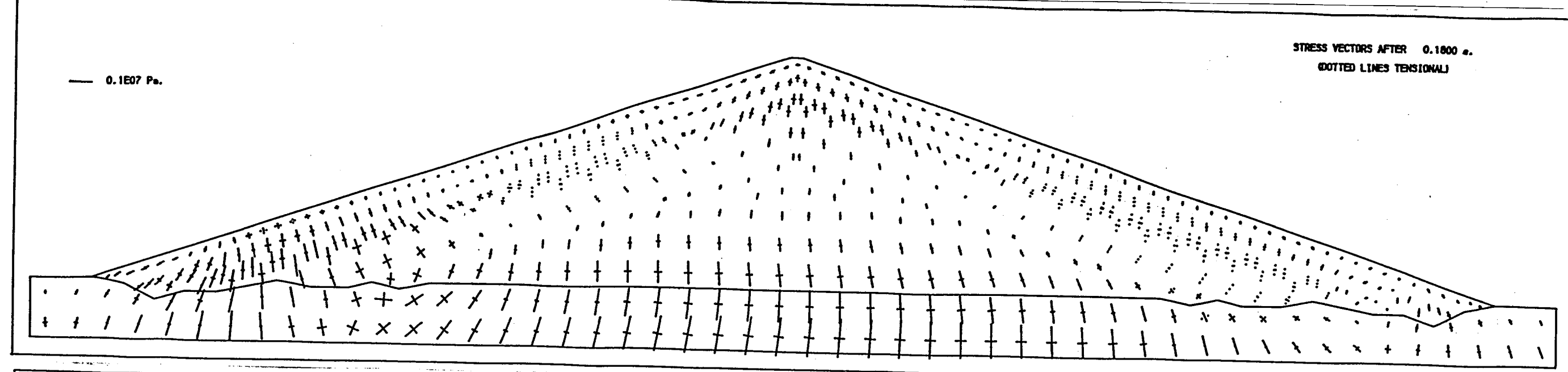
Base acceleration g

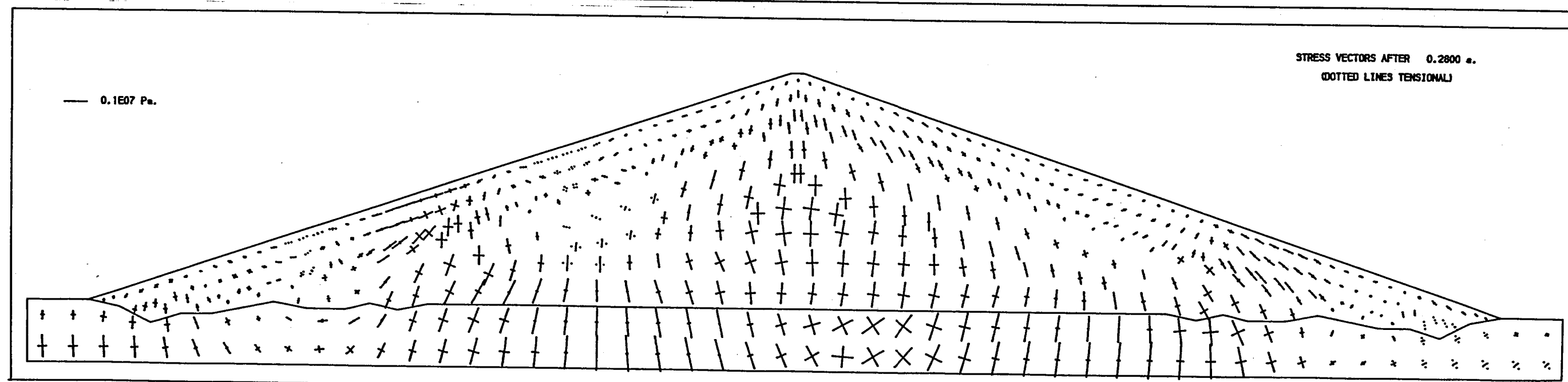
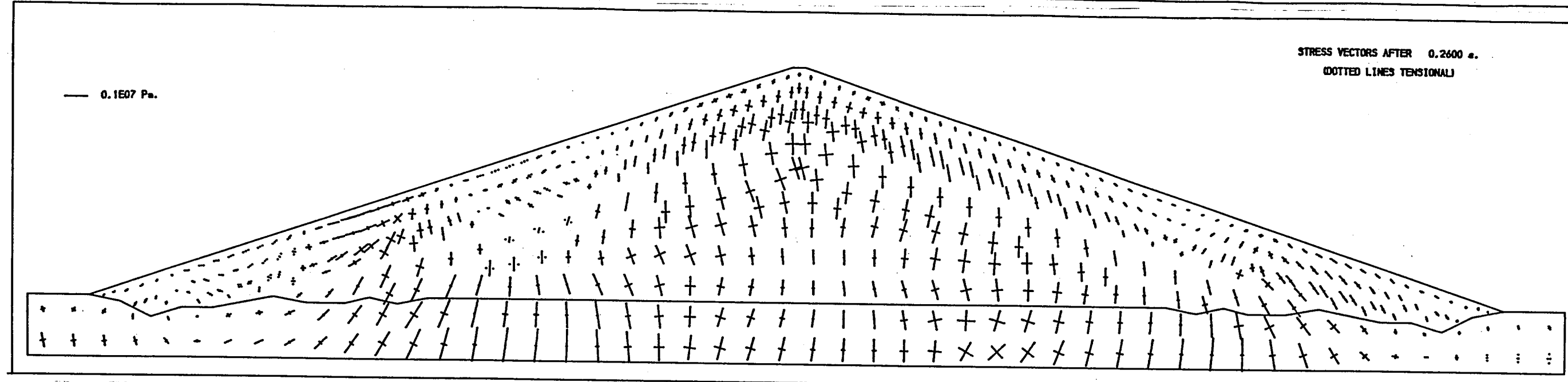
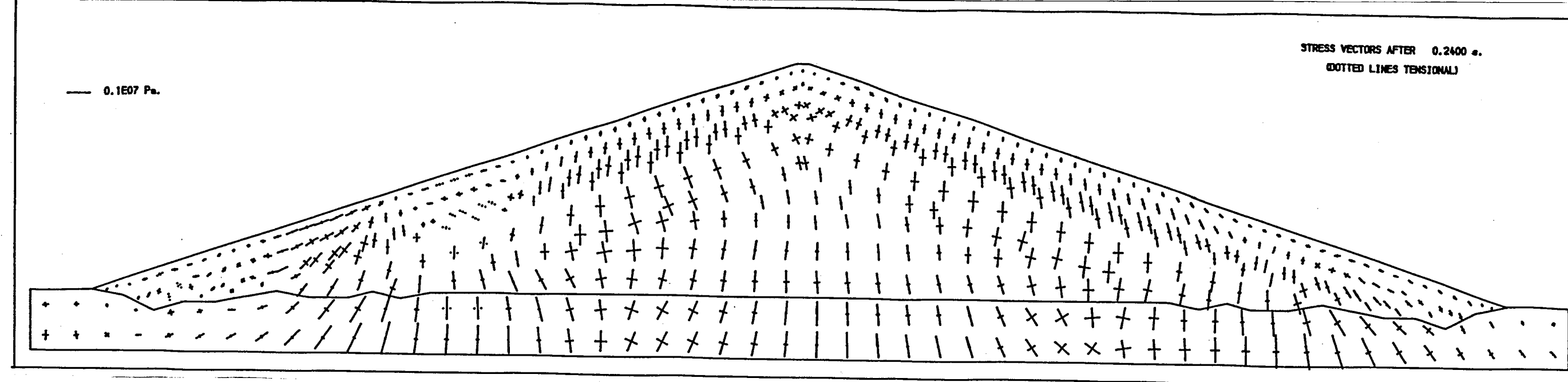


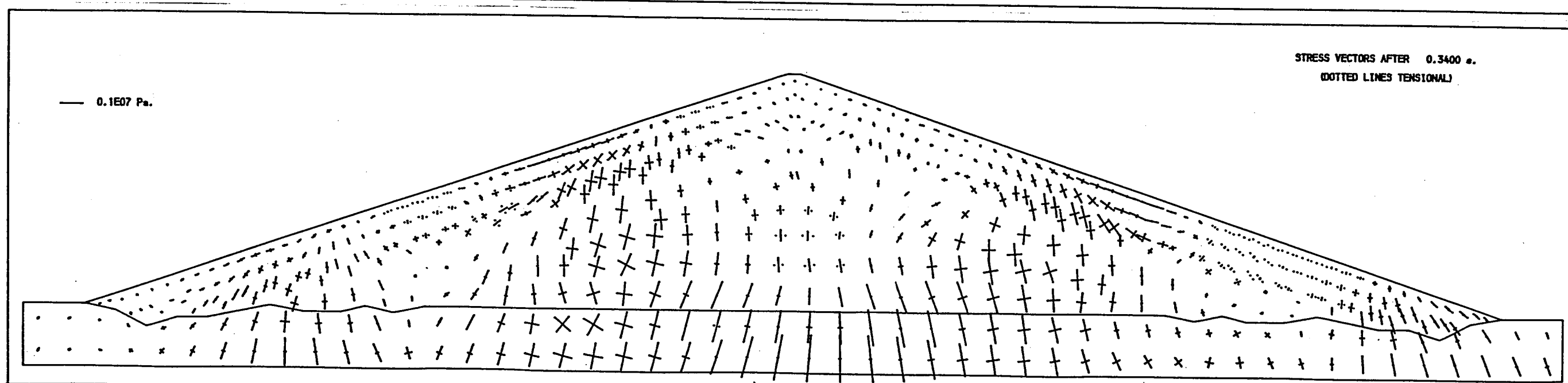
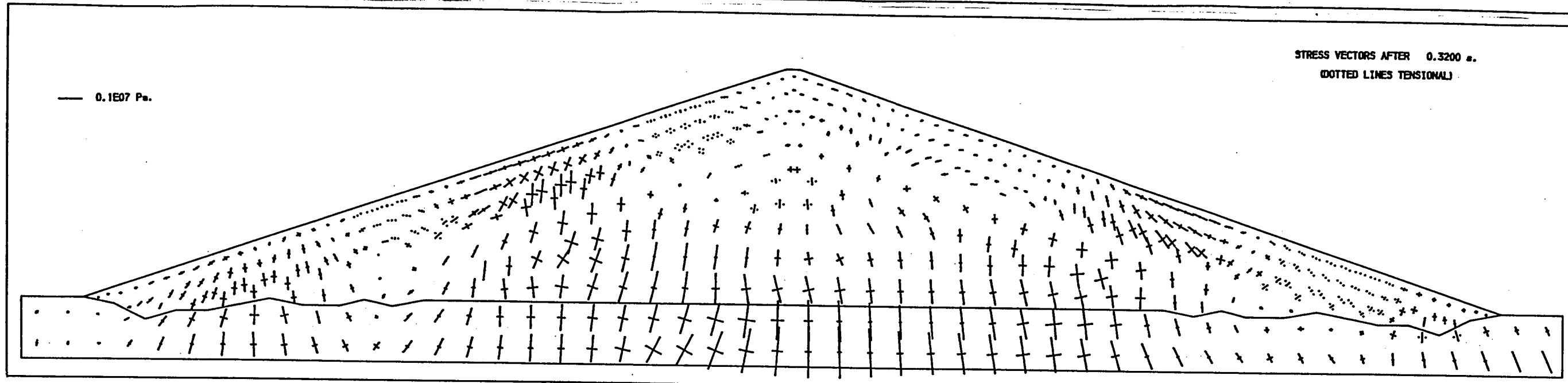
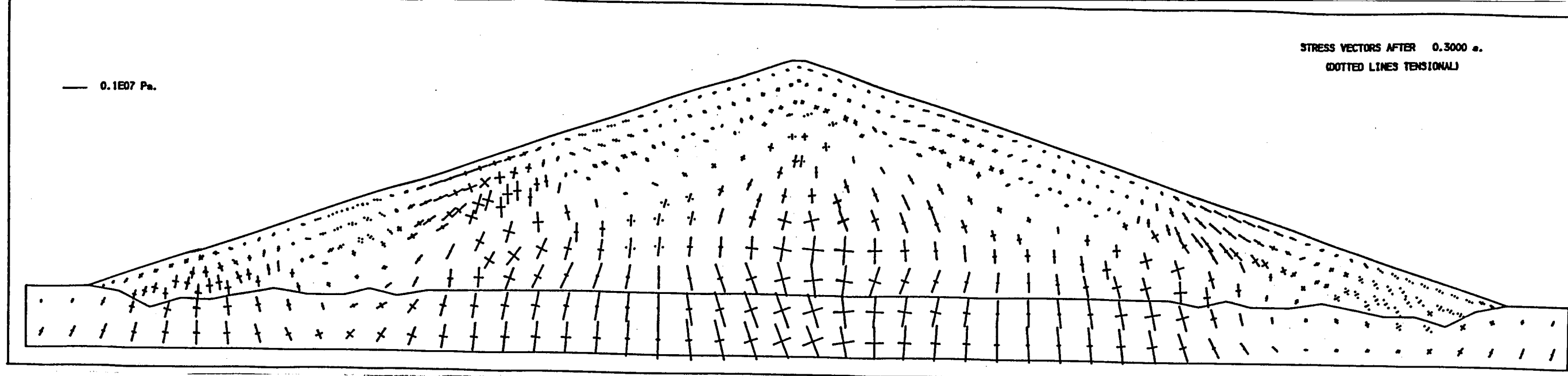


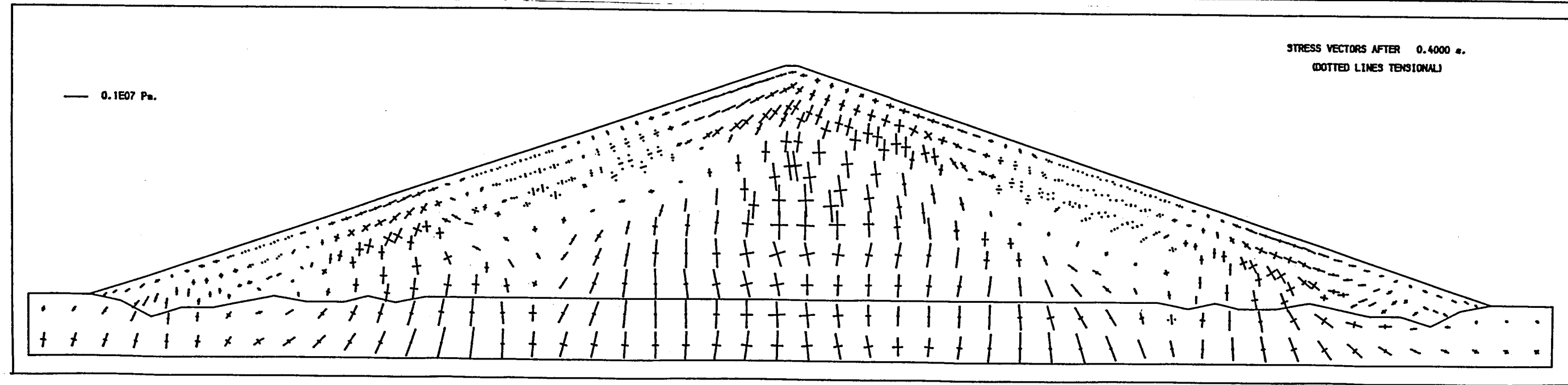
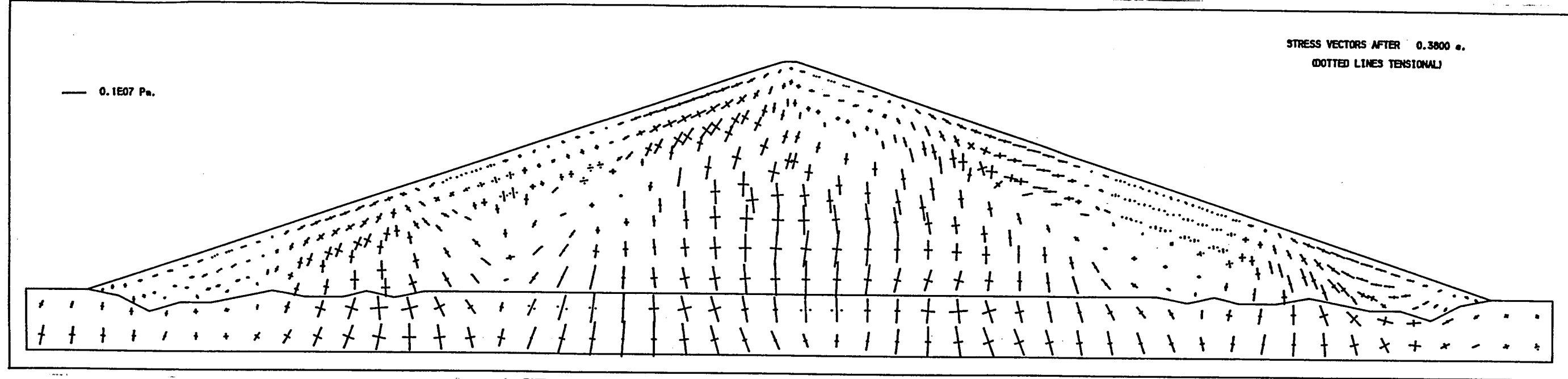
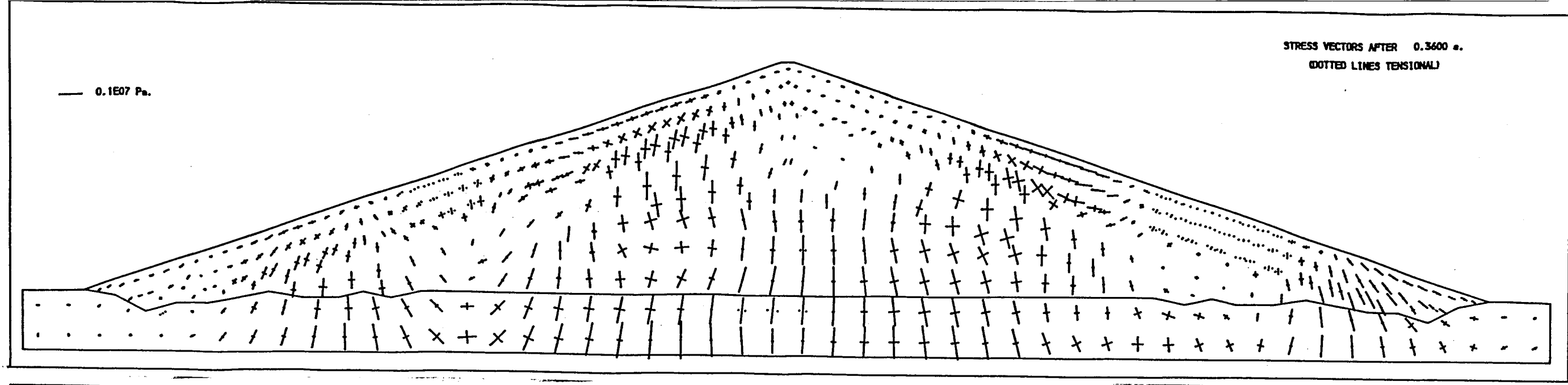










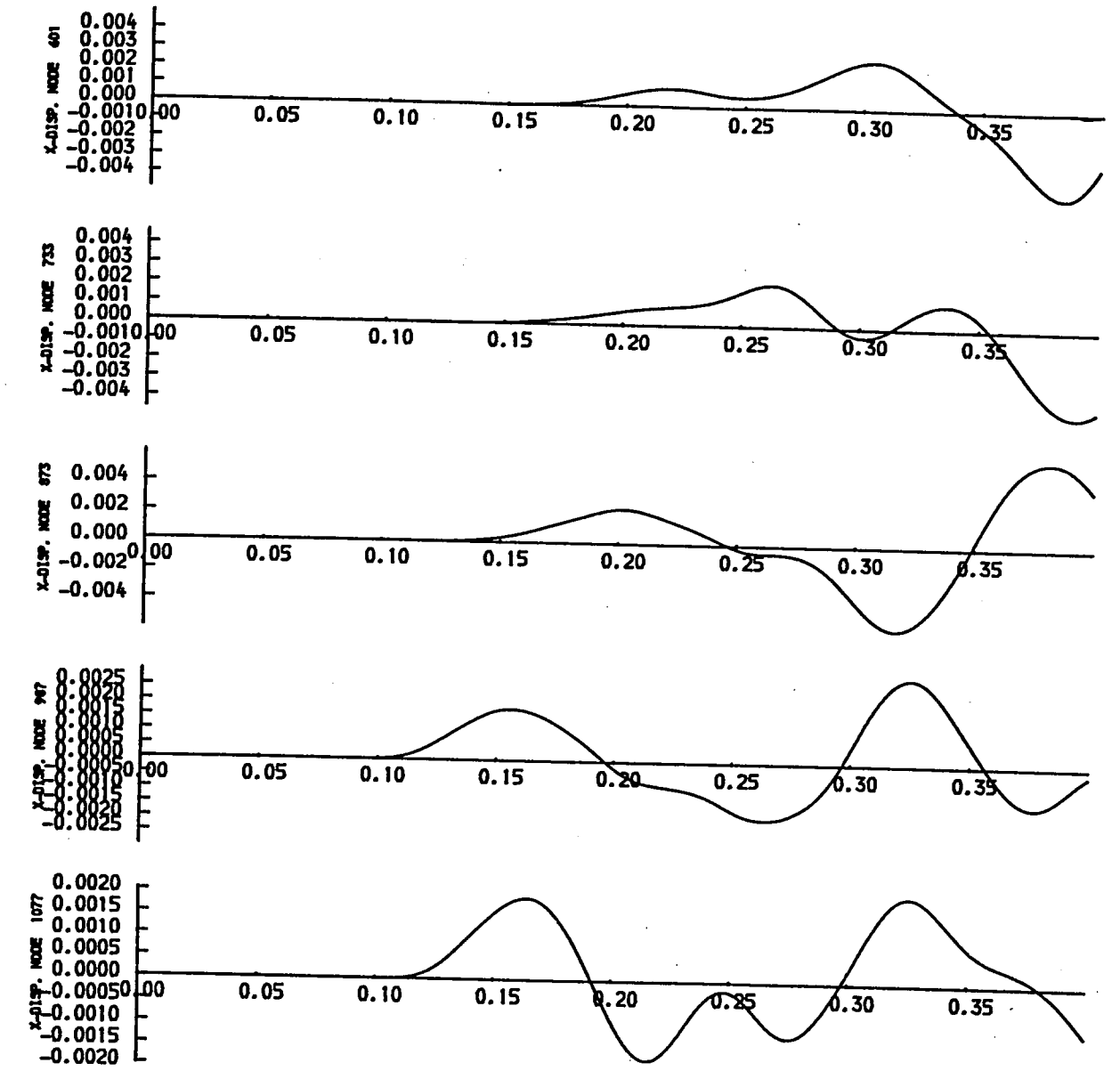
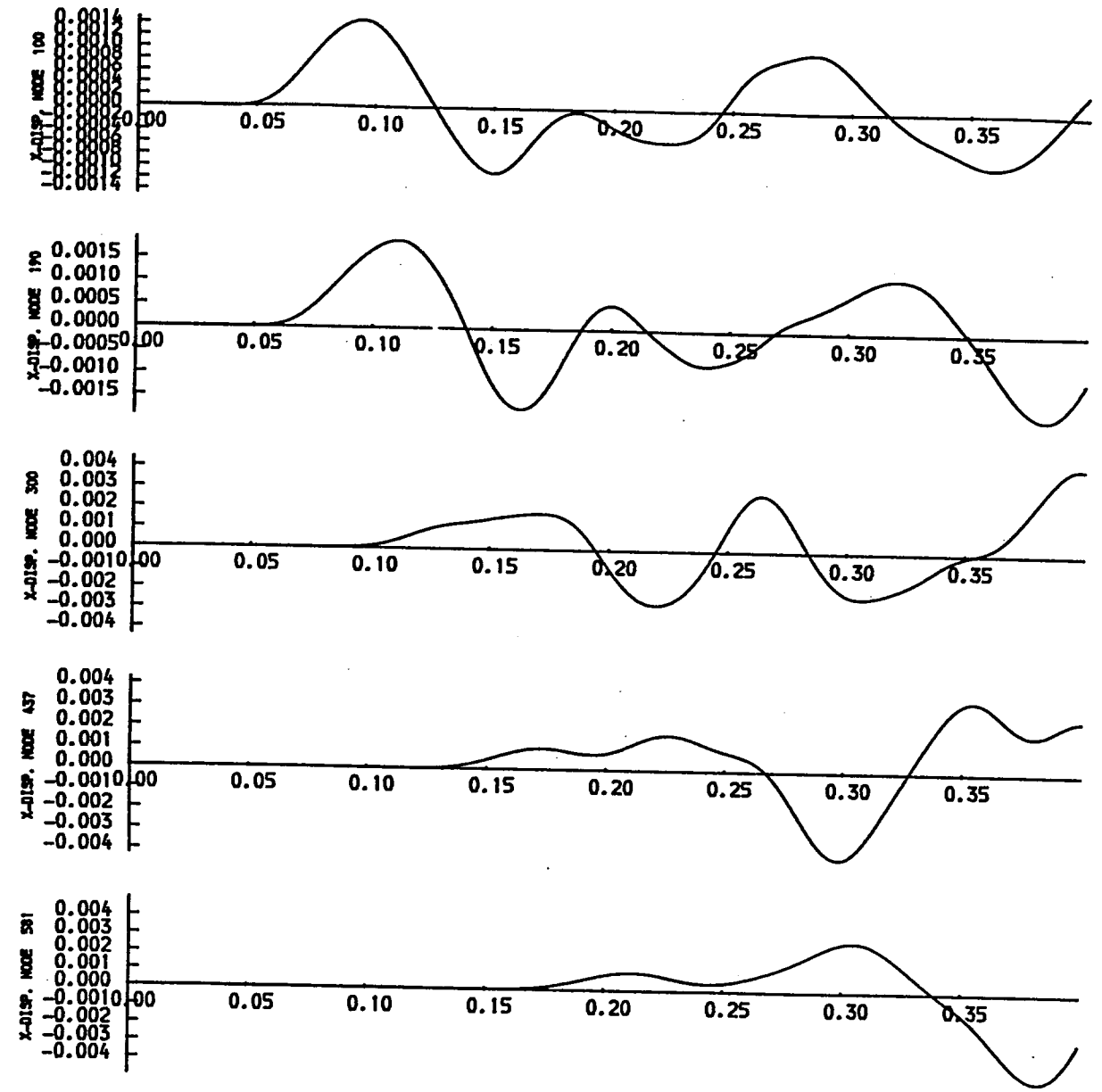


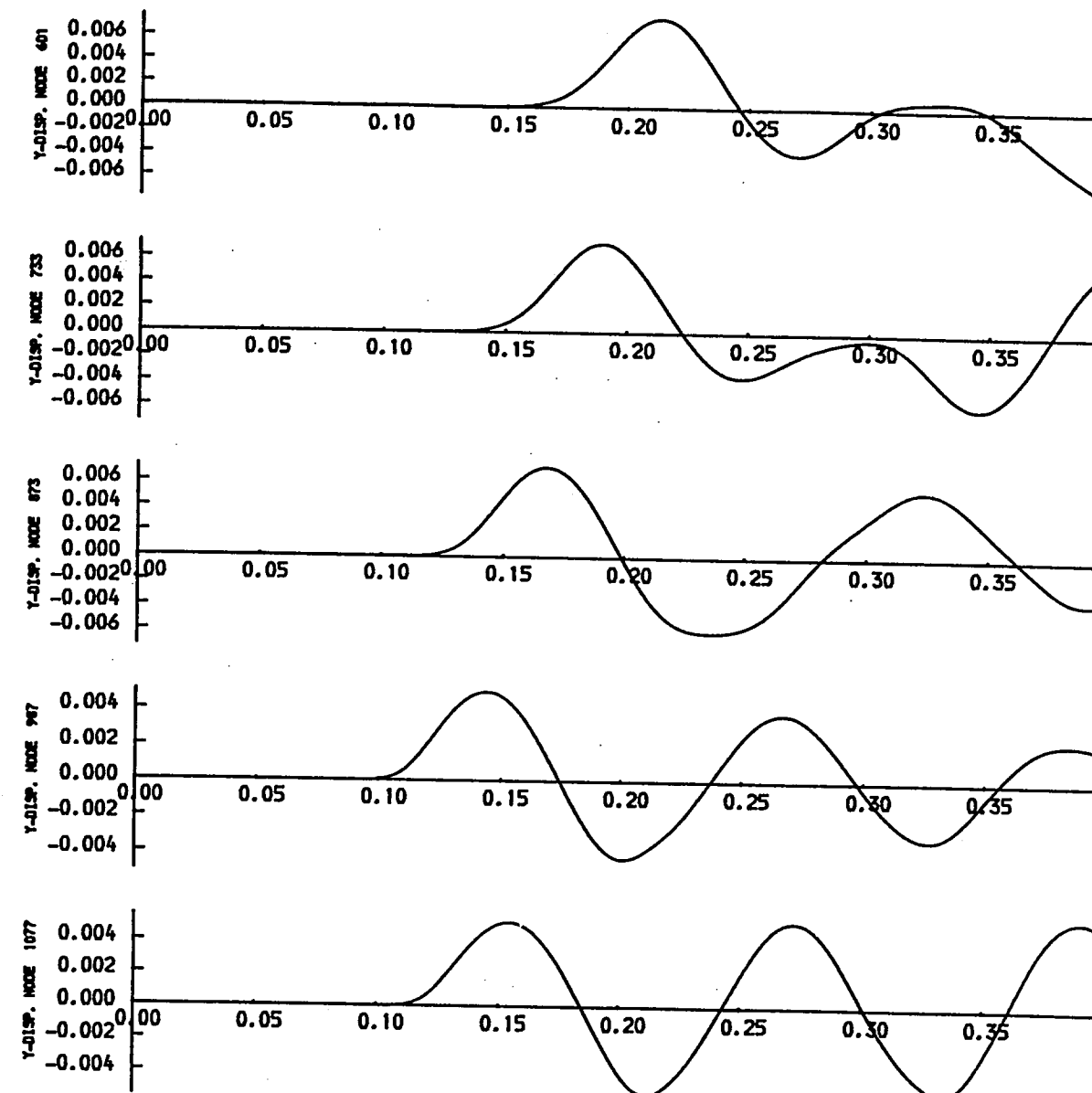
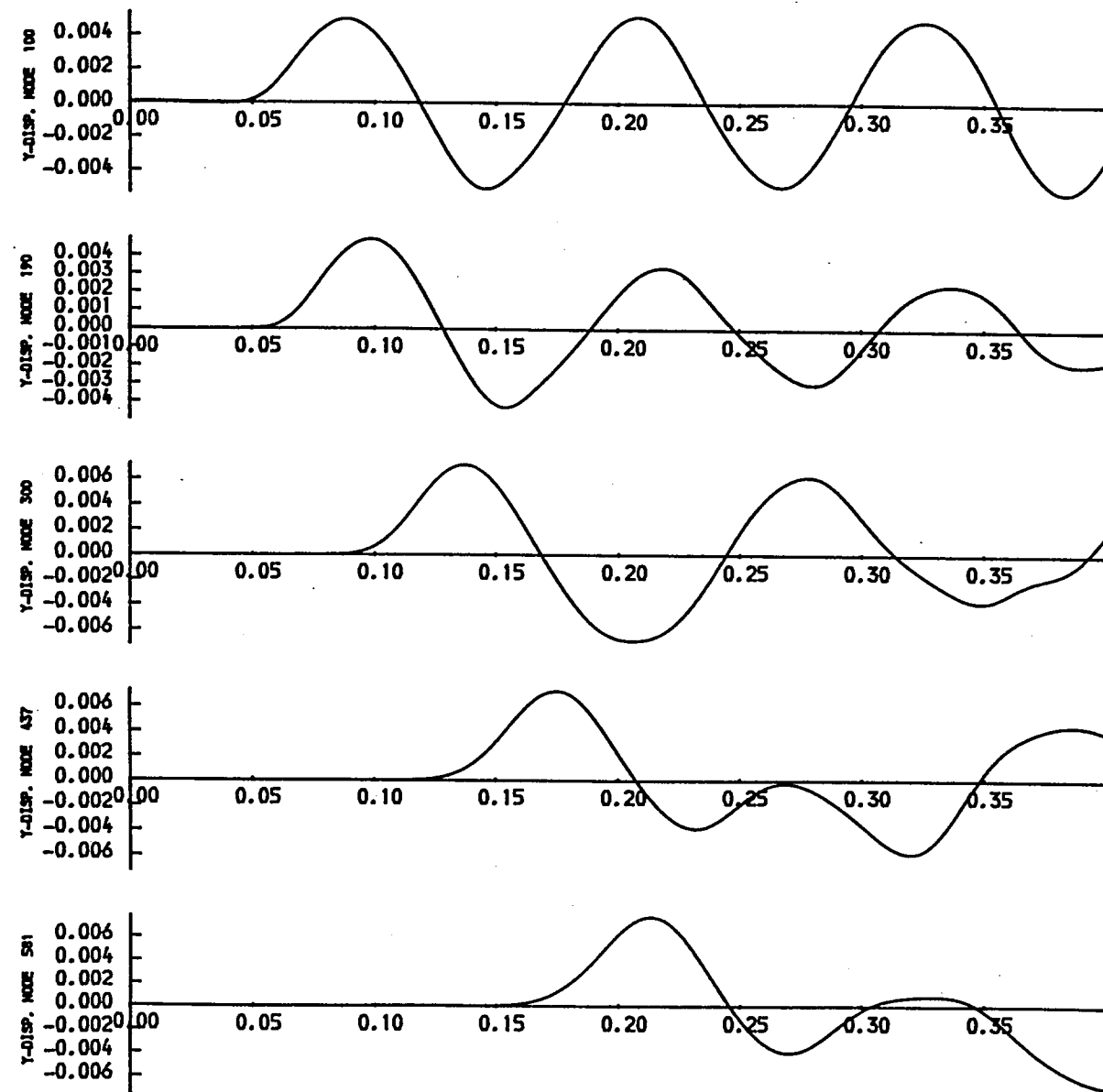
Time-displacement graphs and stress distributions for D2/5

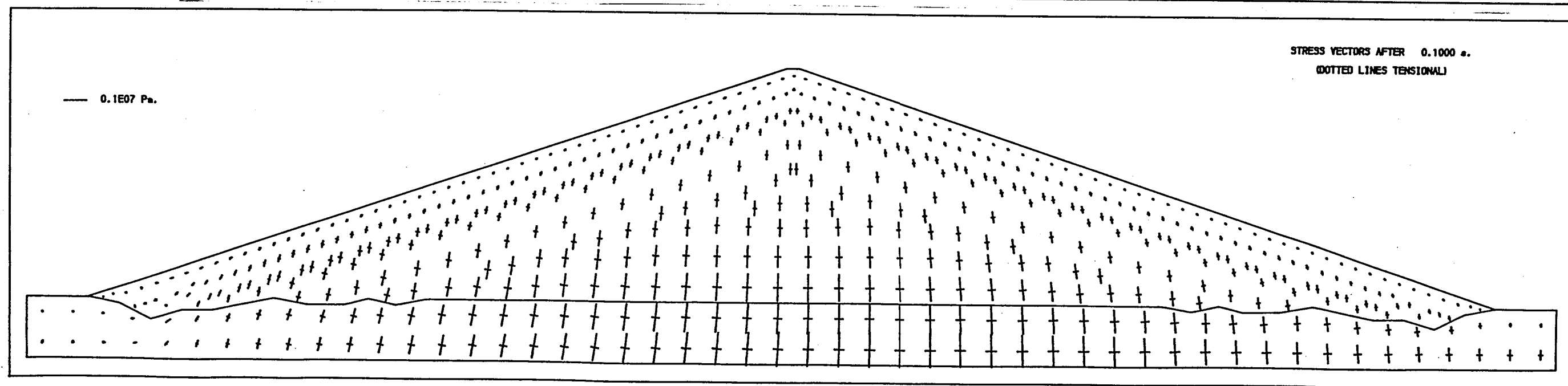
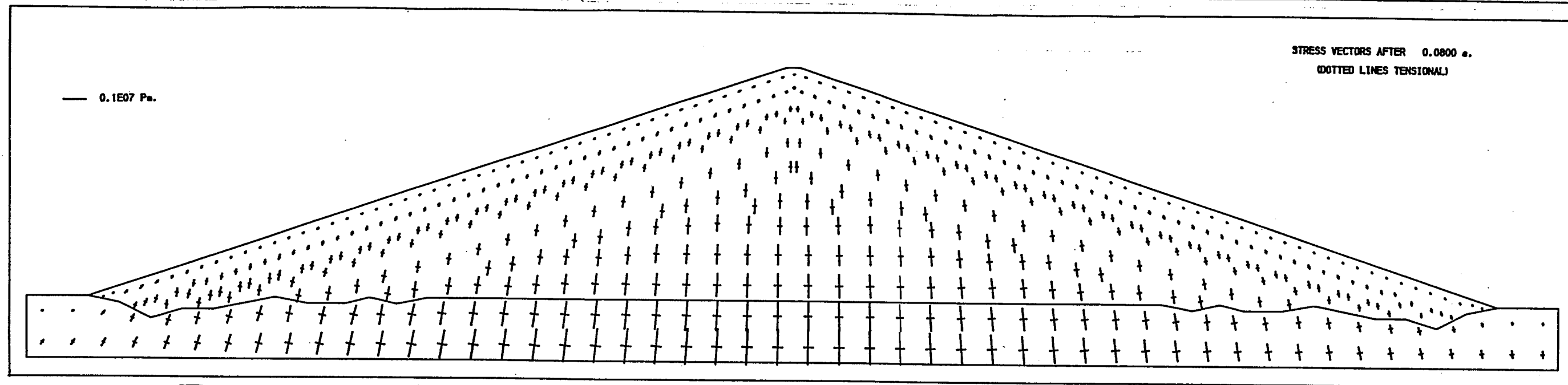
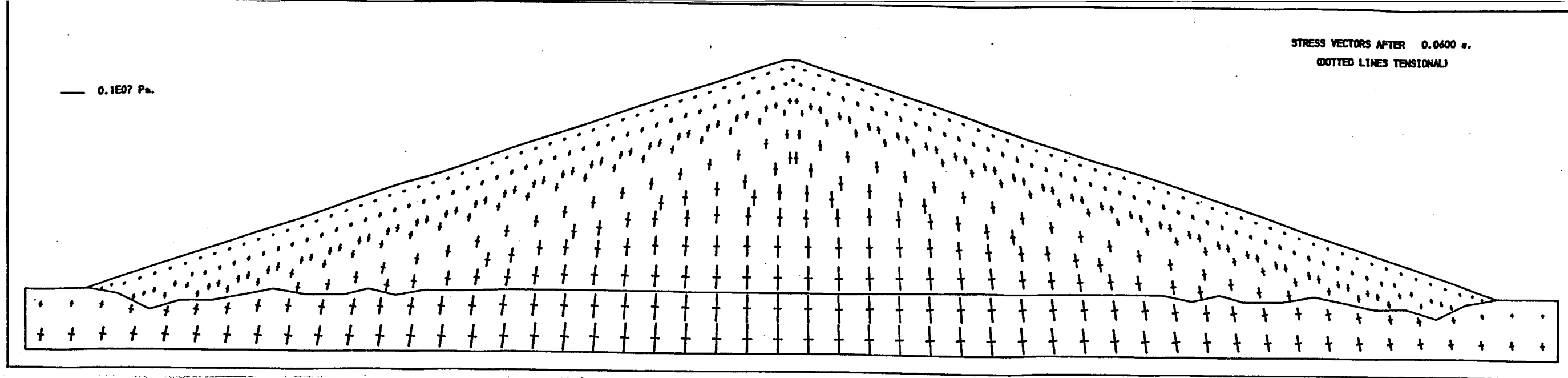
P-wave

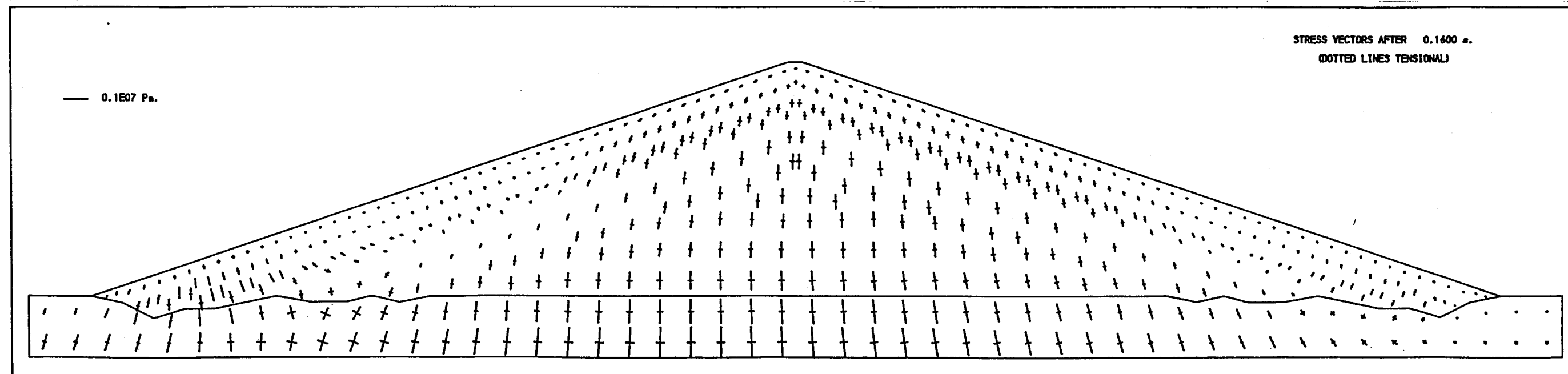
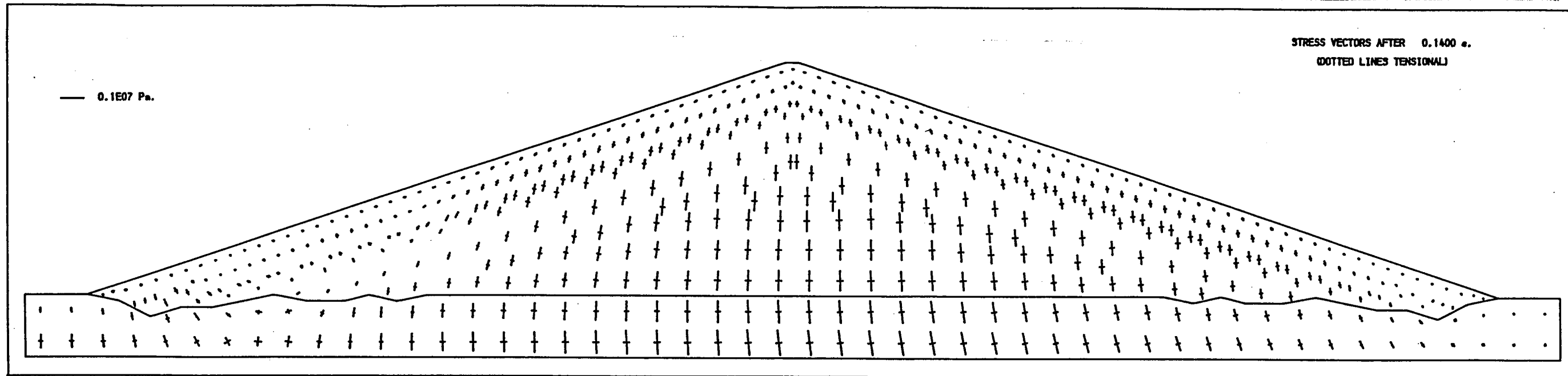
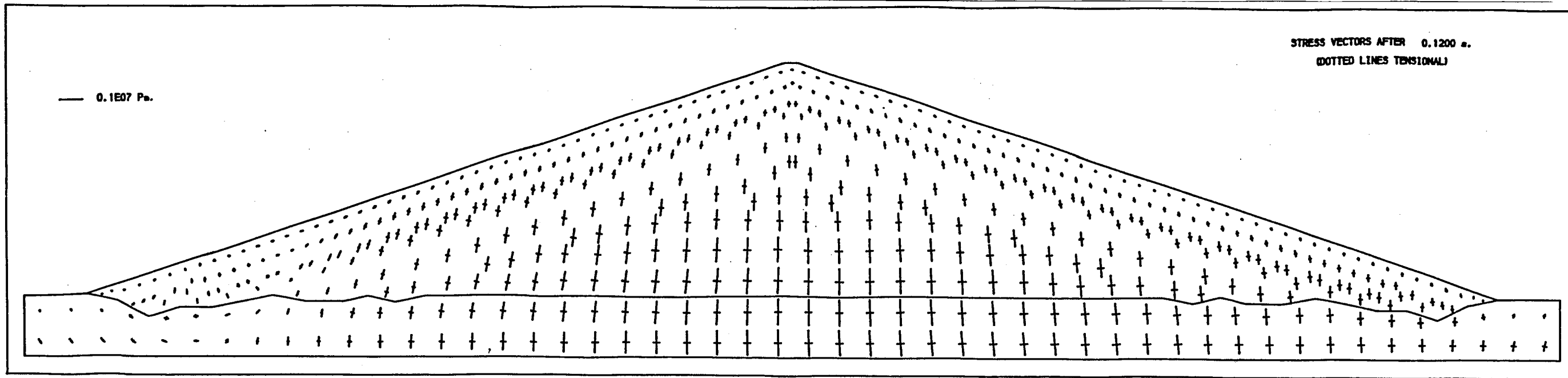
Angle of incidence 20°

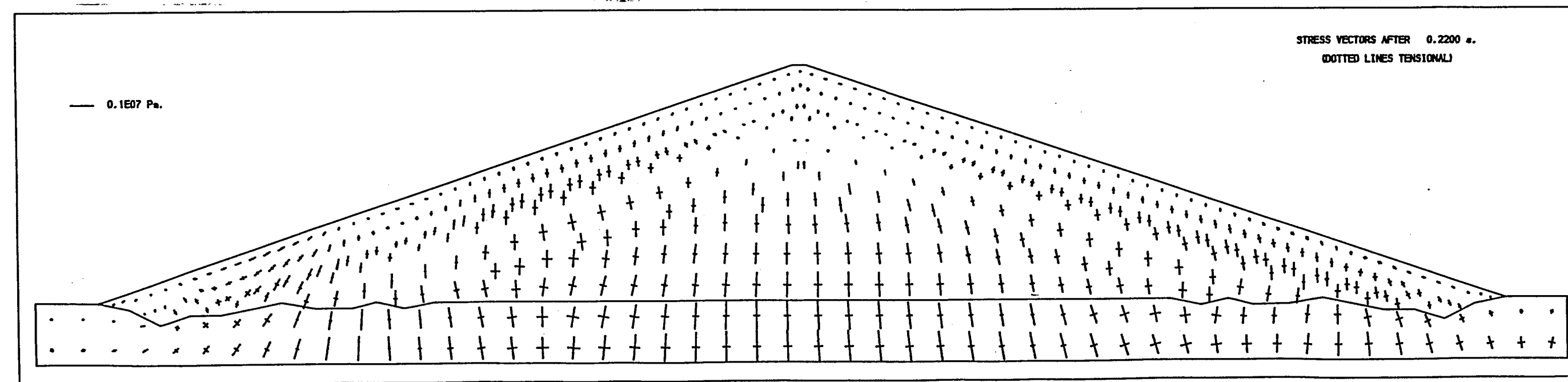
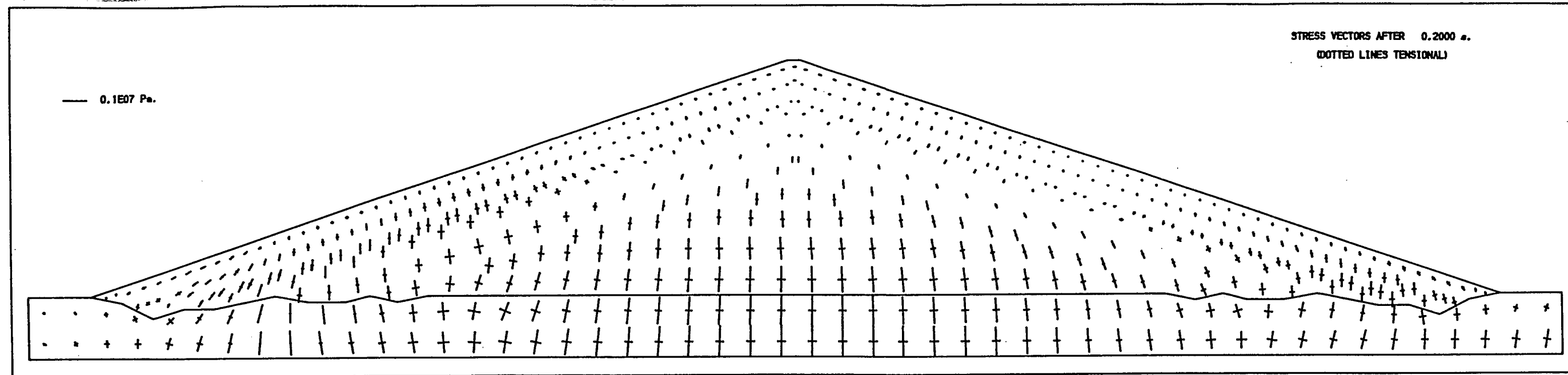
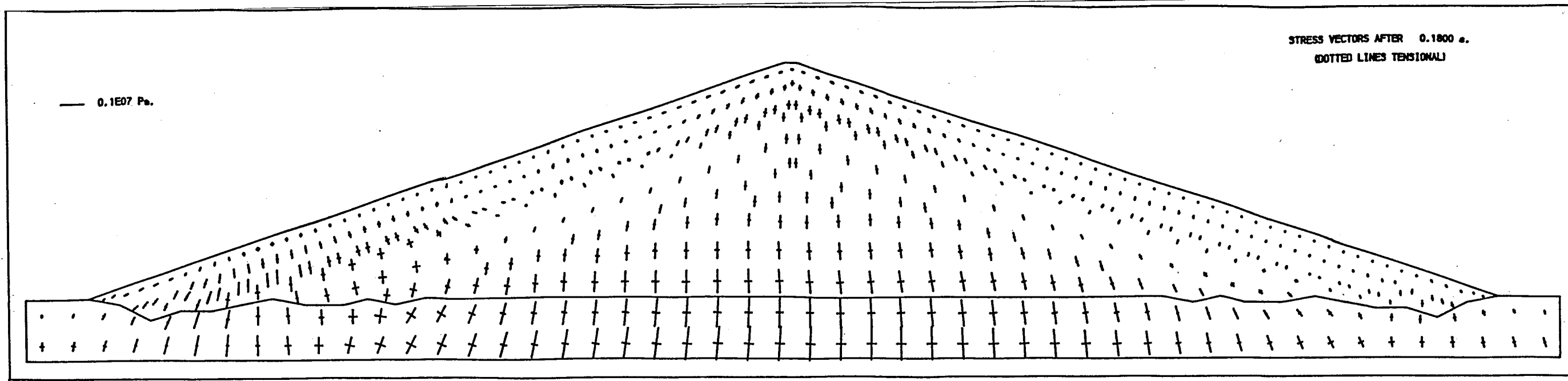
Base acceleration $\frac{1}{2}g$

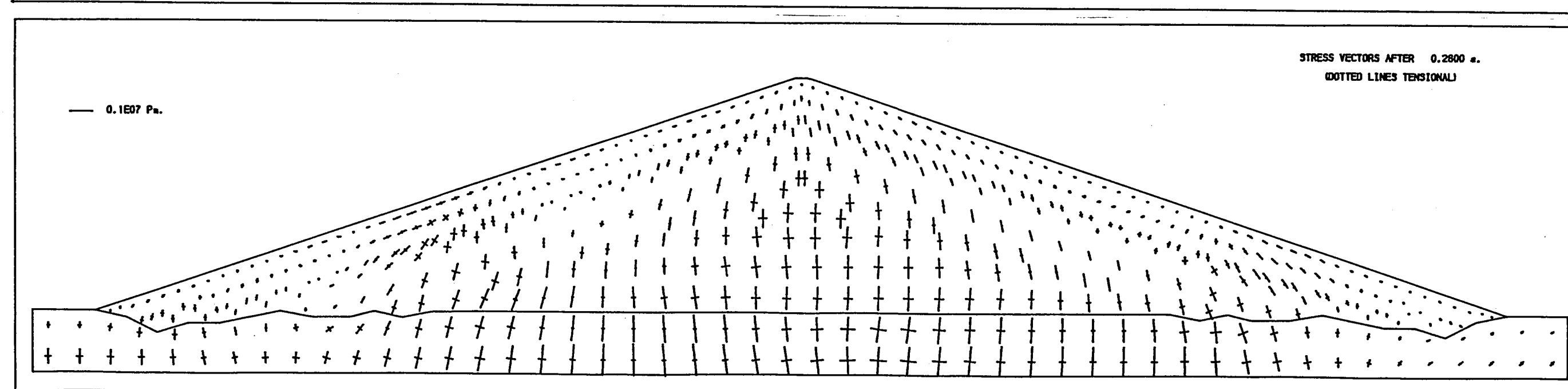
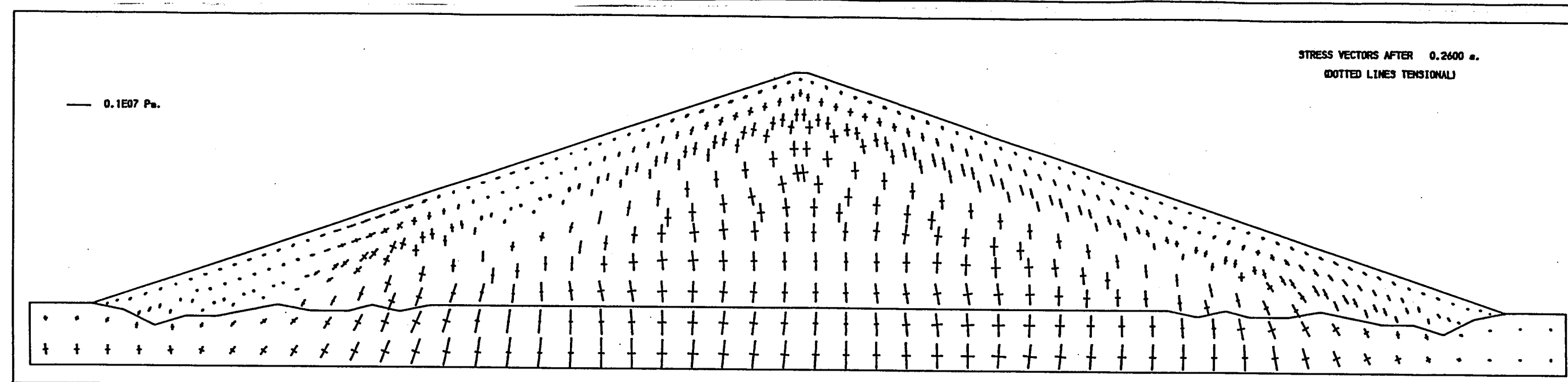
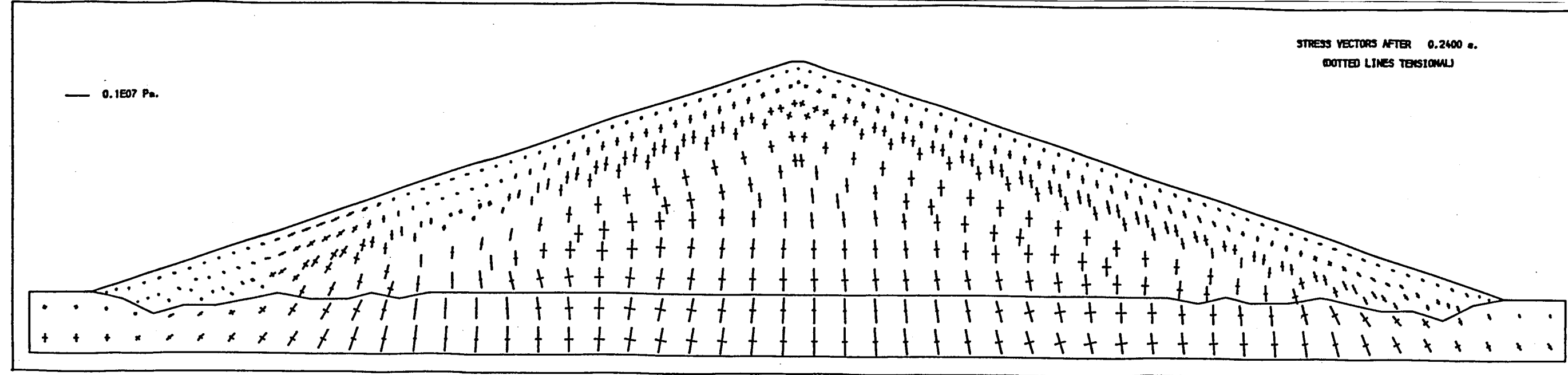


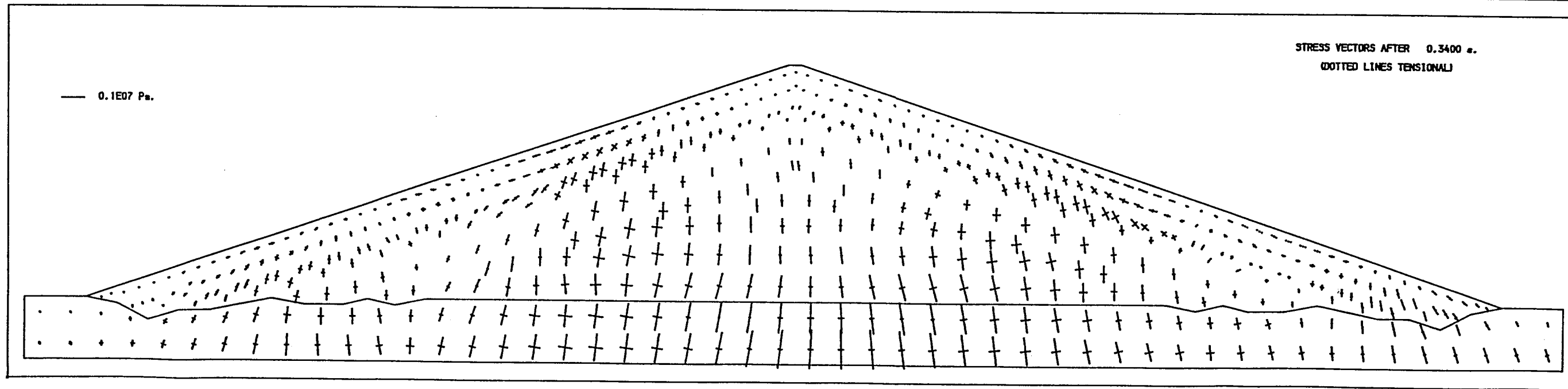
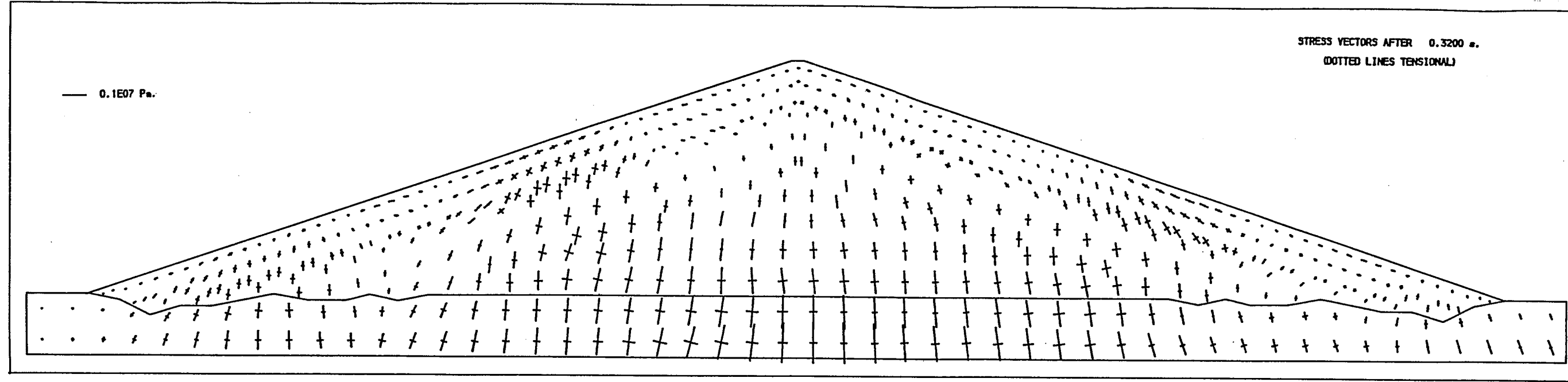
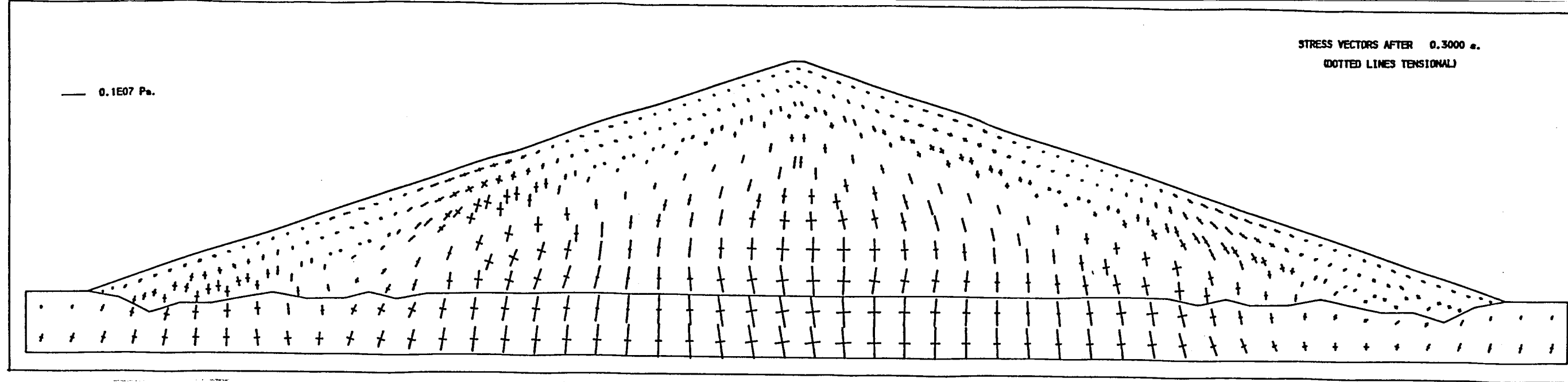


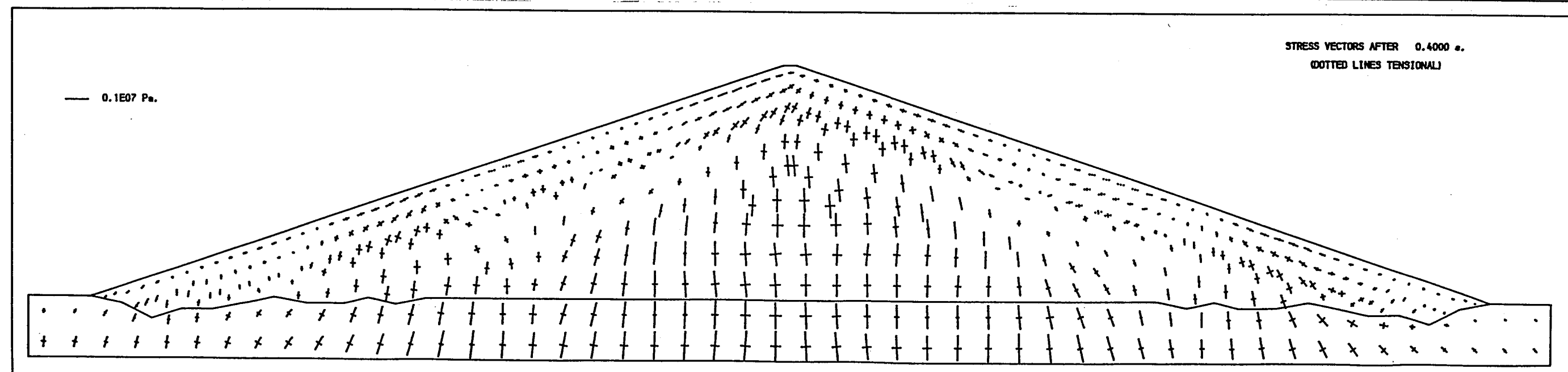
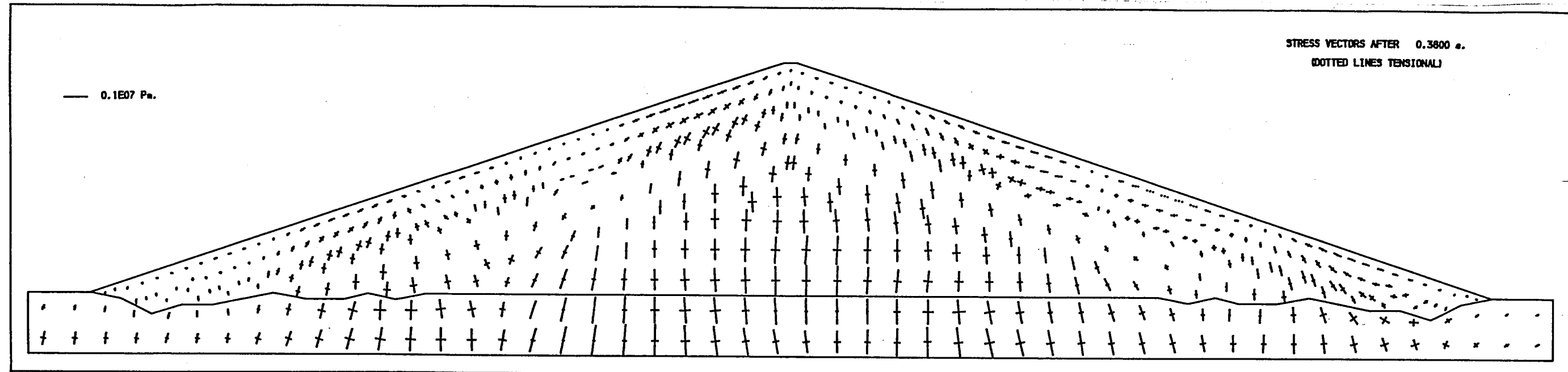
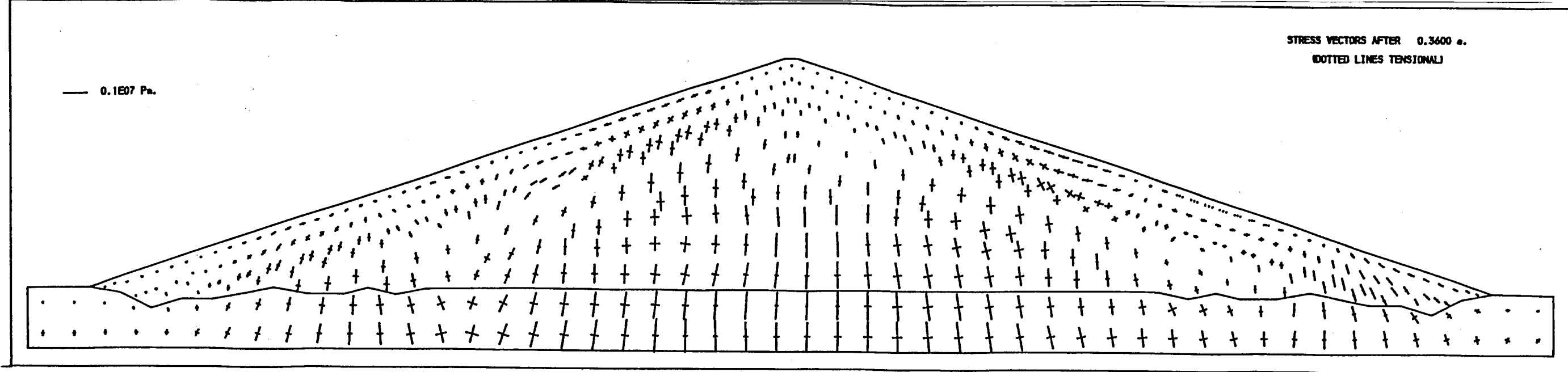










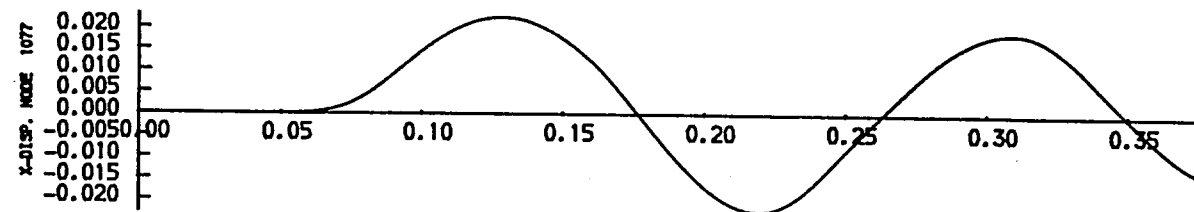
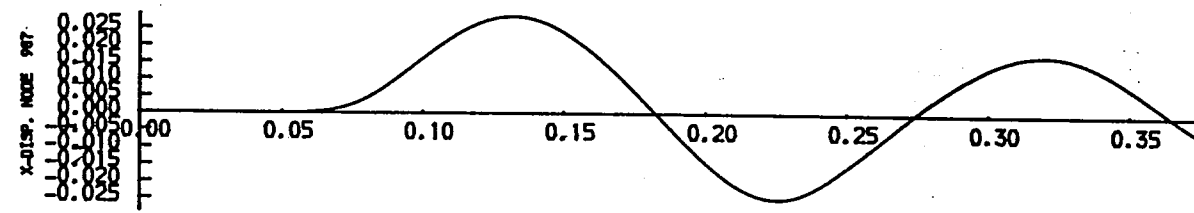
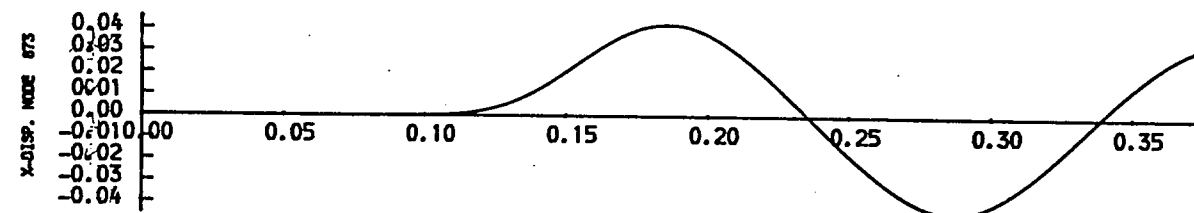
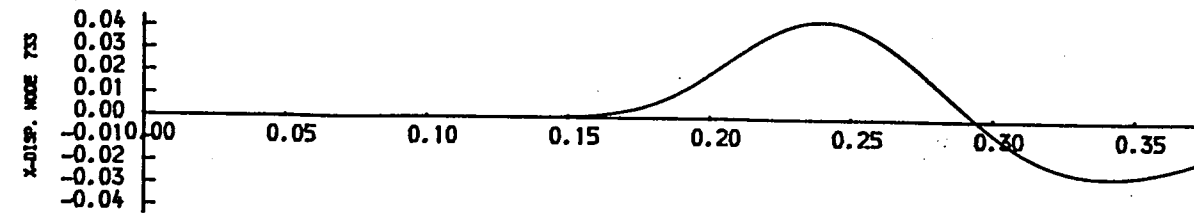
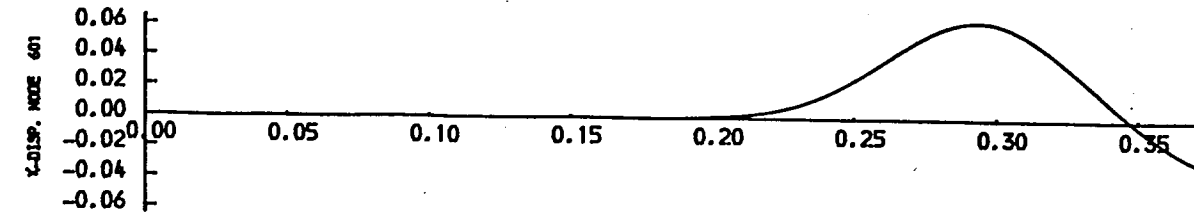
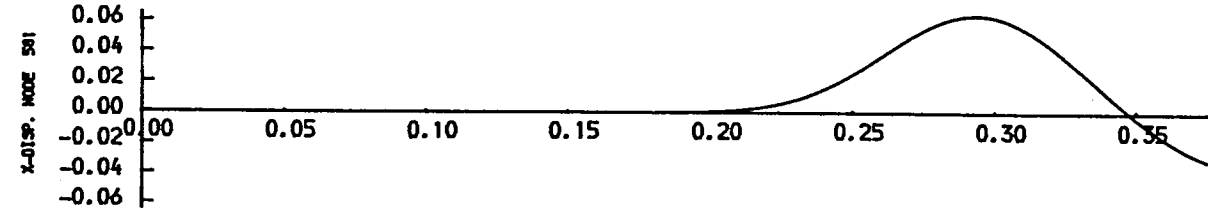
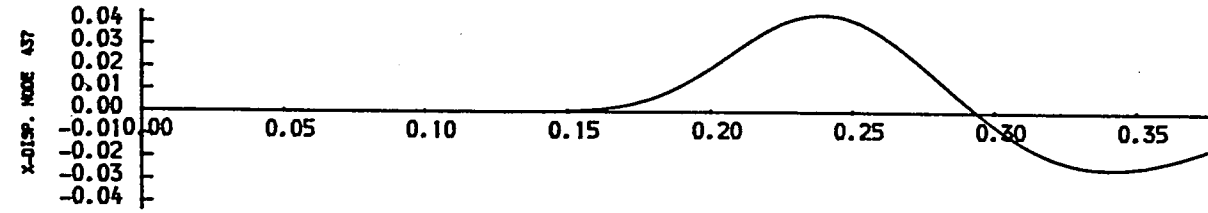
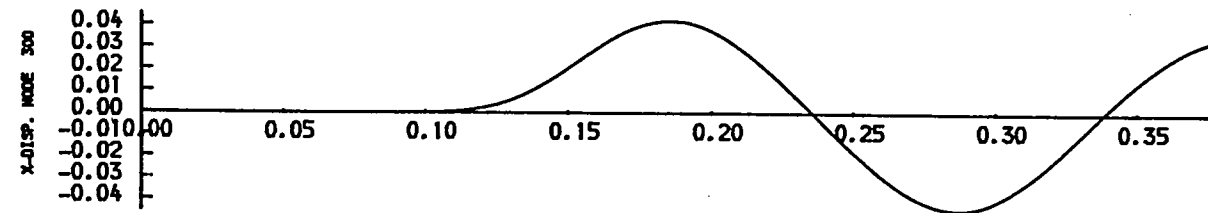
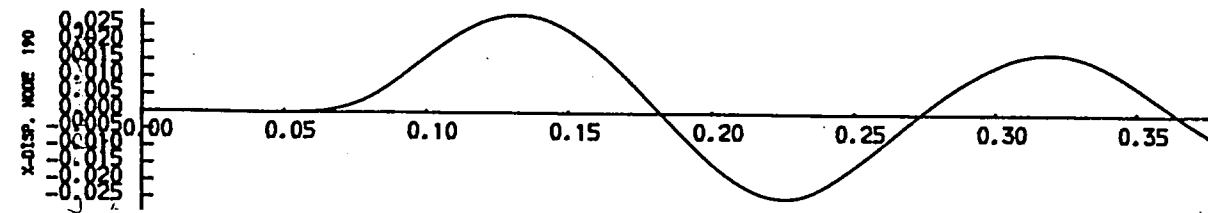
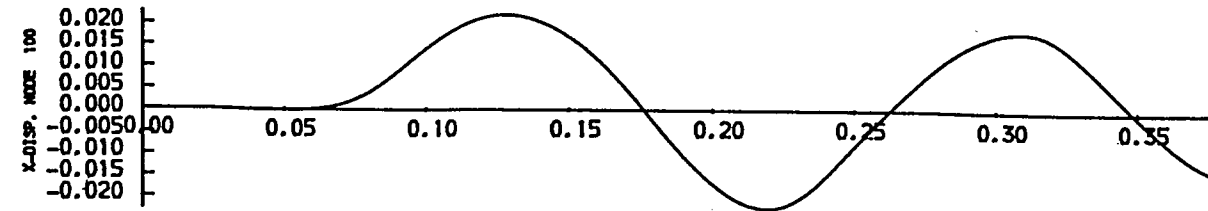


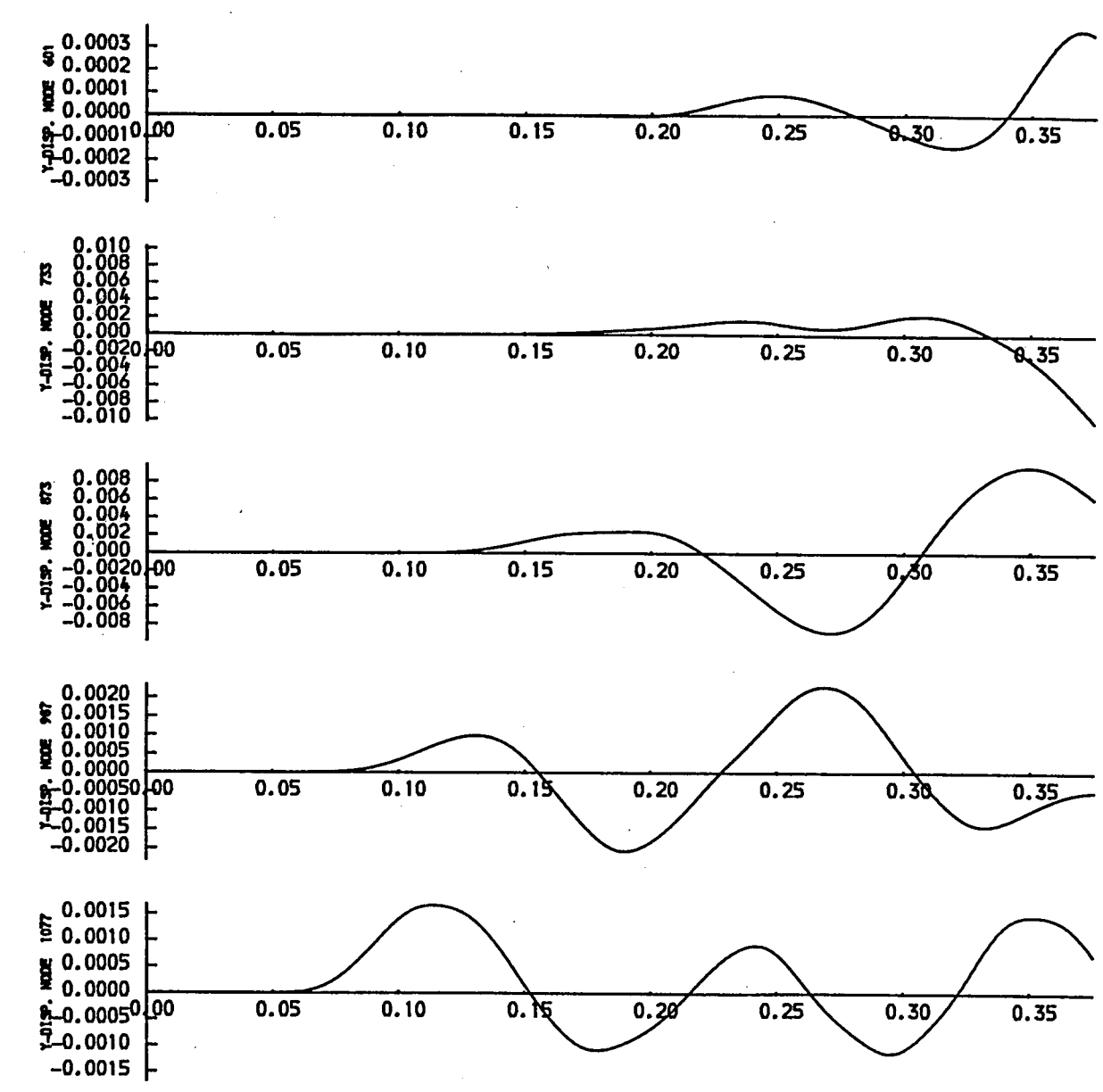
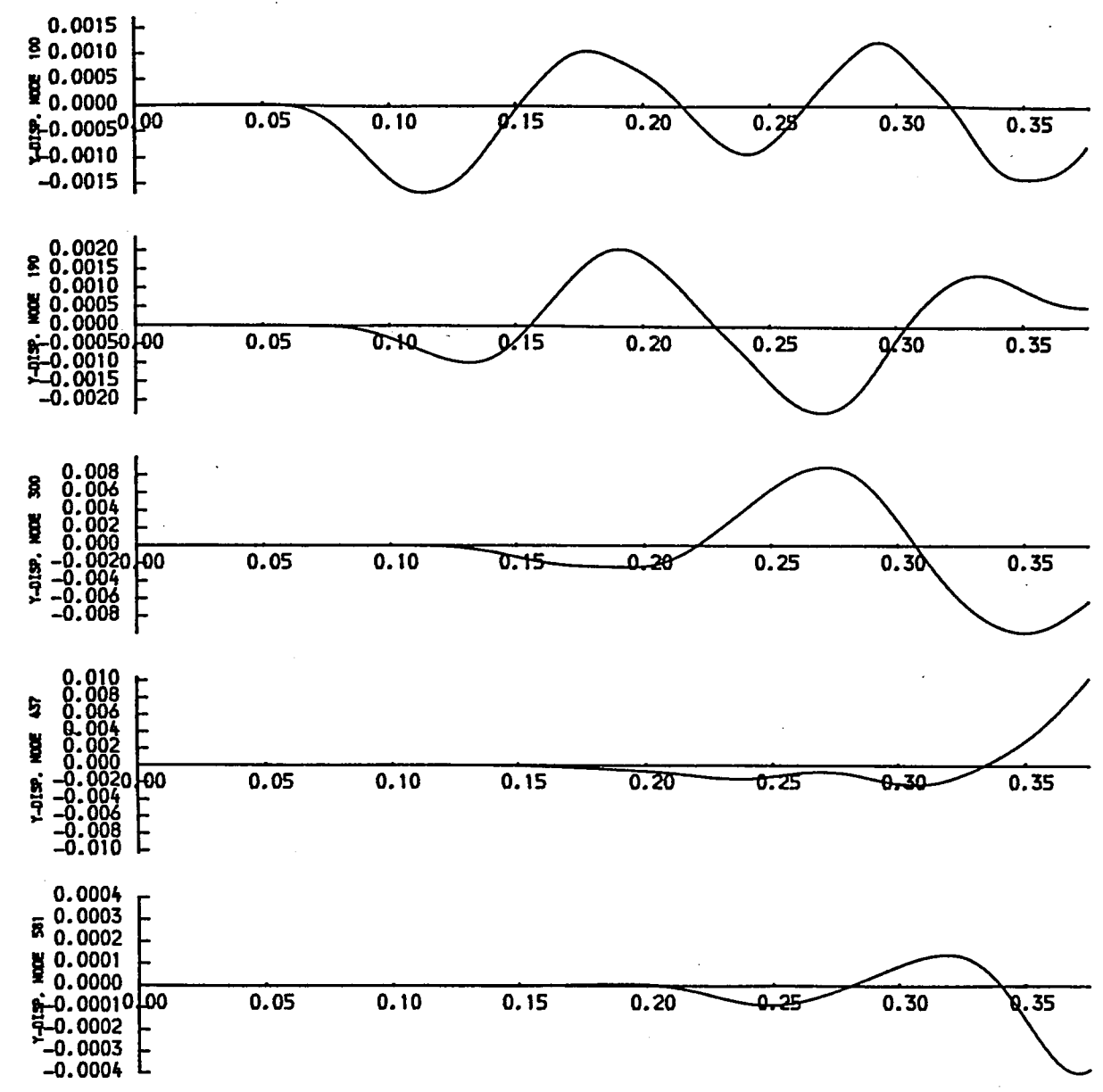
Time-displacement graphs and stress distributions for D2/6

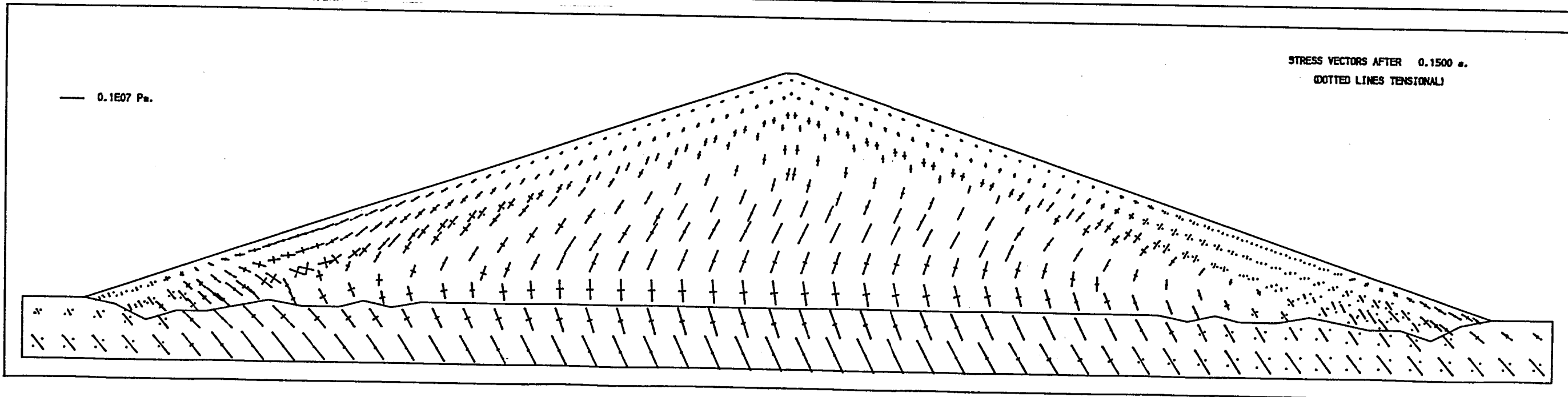
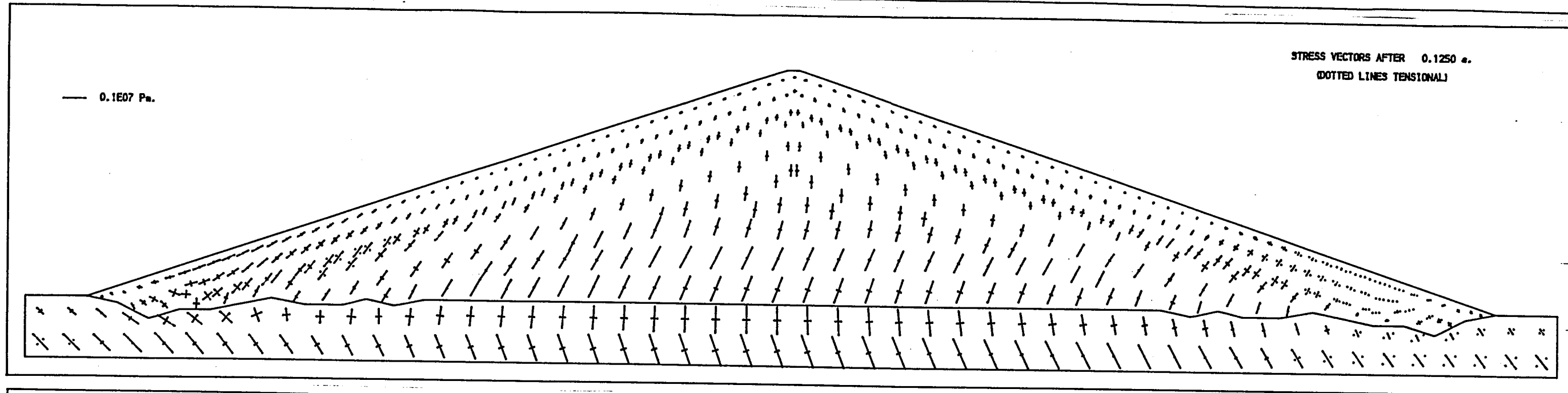
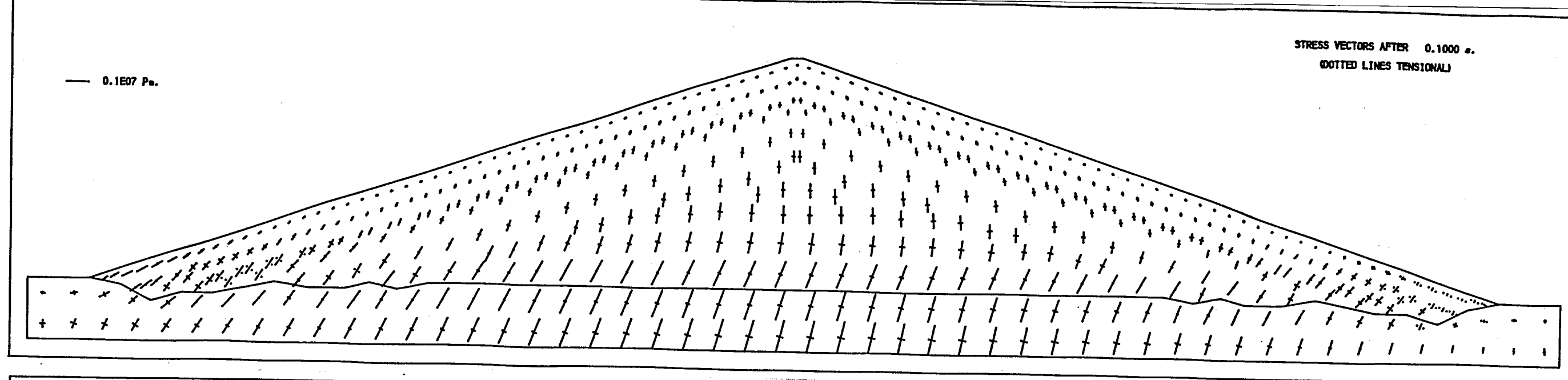
S-wave

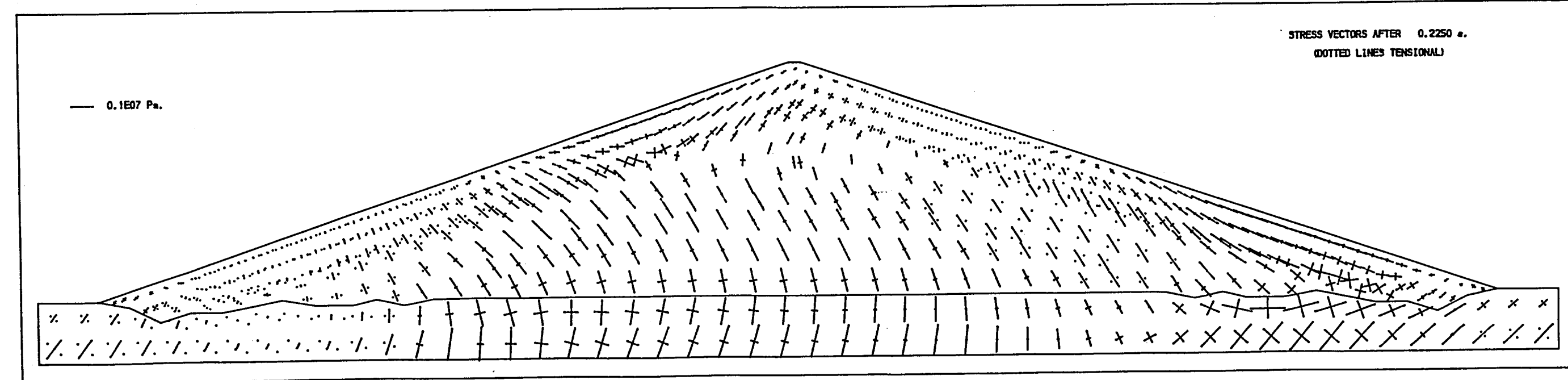
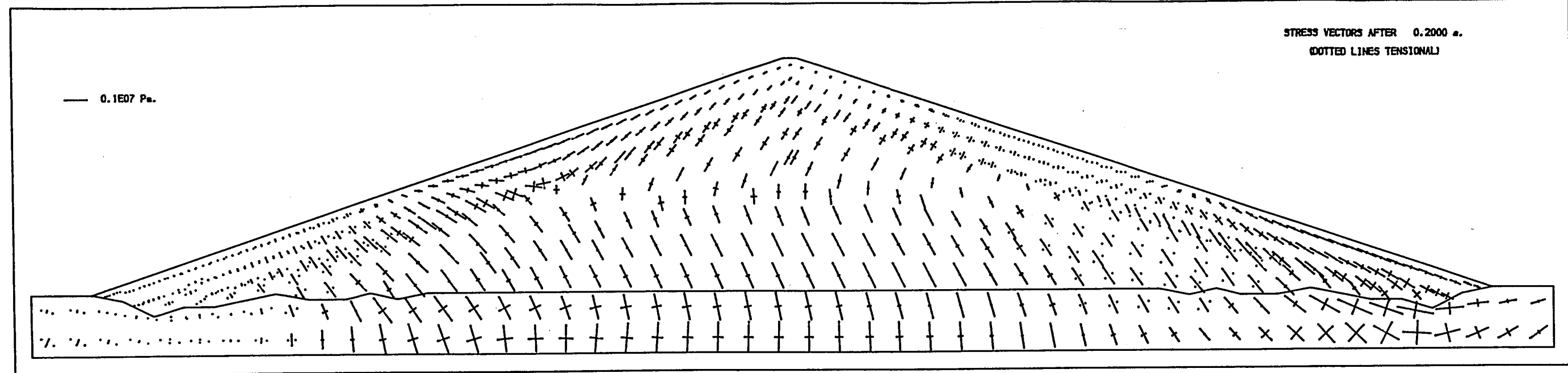
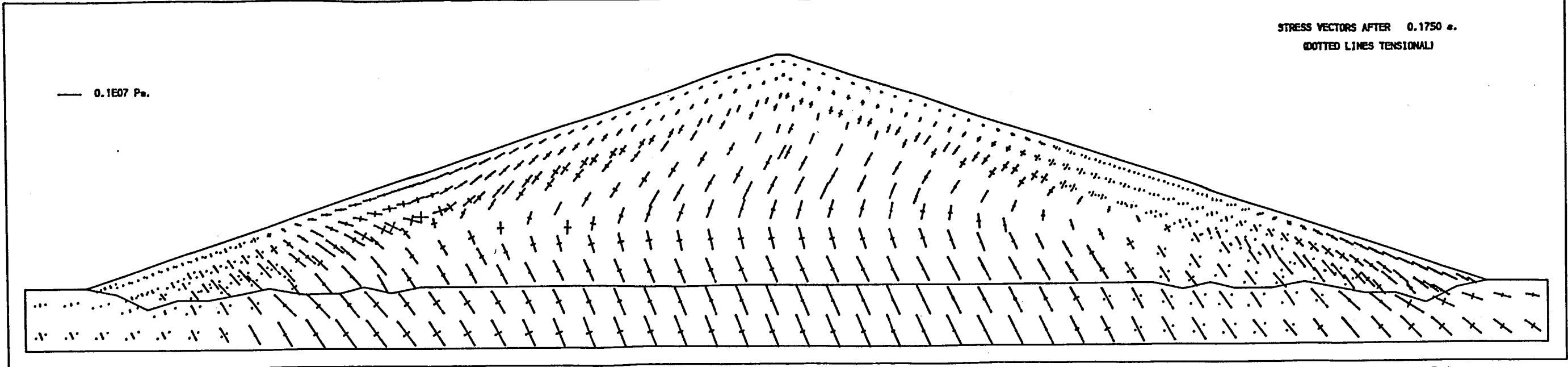
Angle of incidence 0°

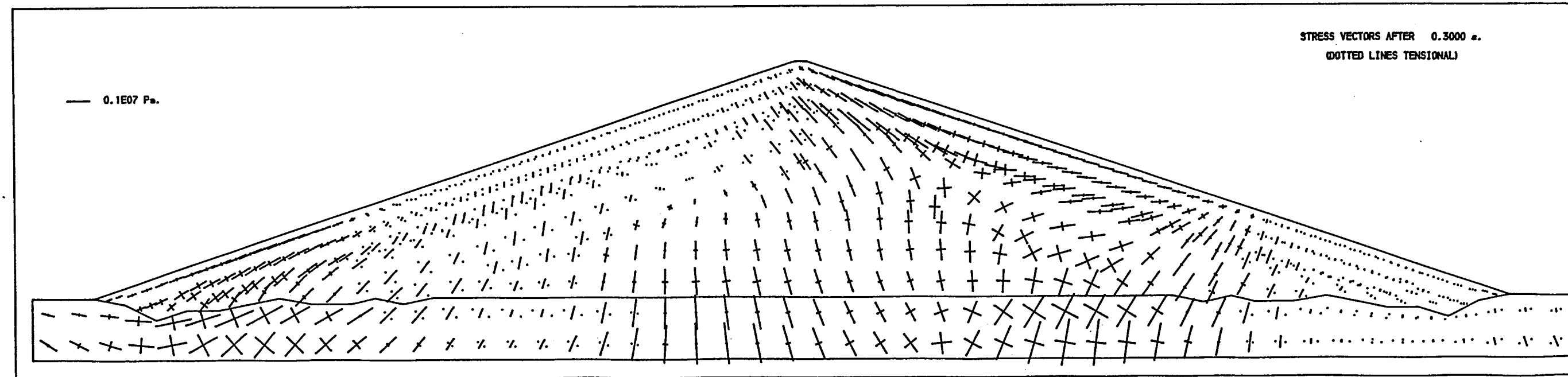
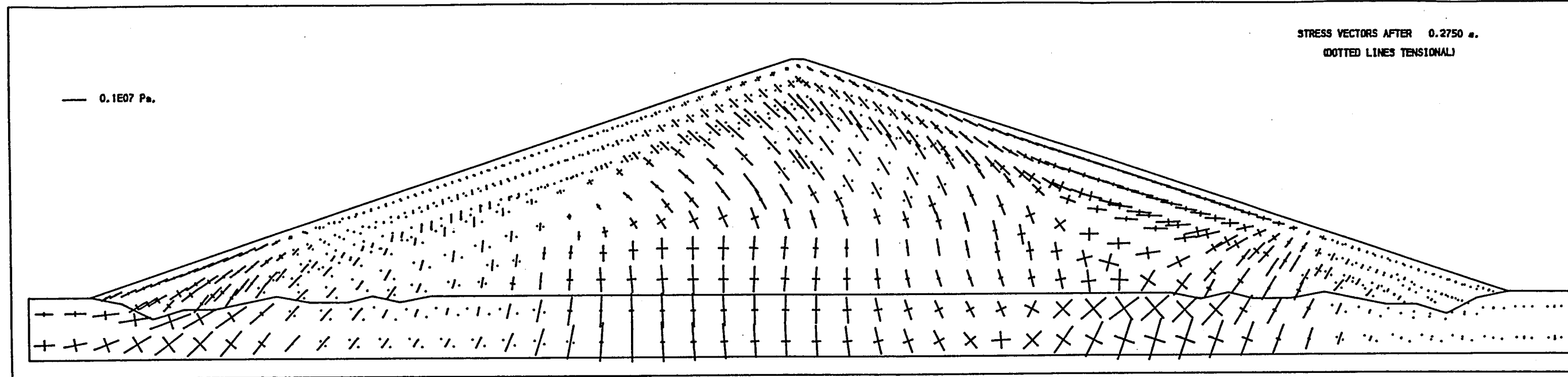
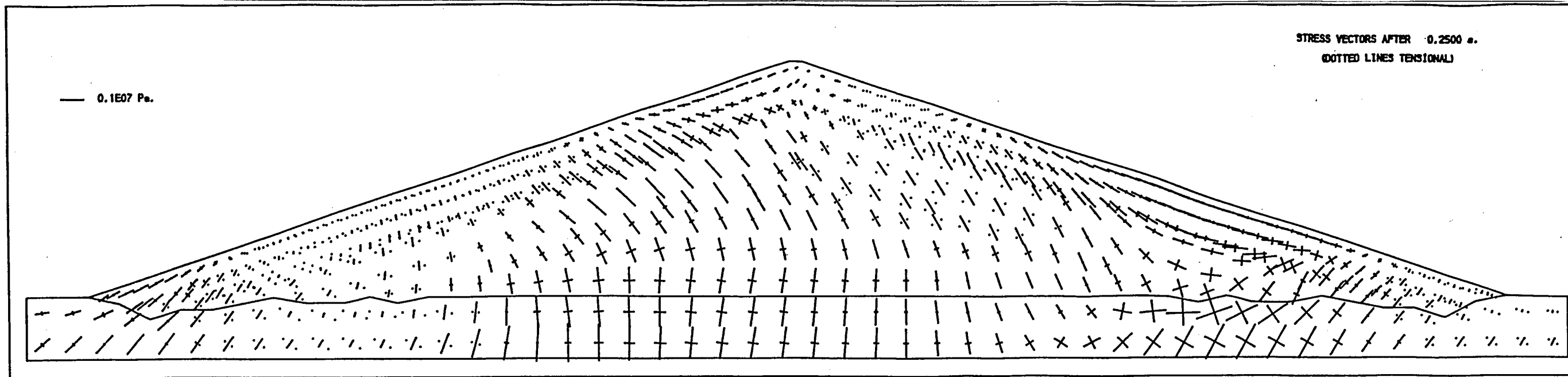
Base acceleration g

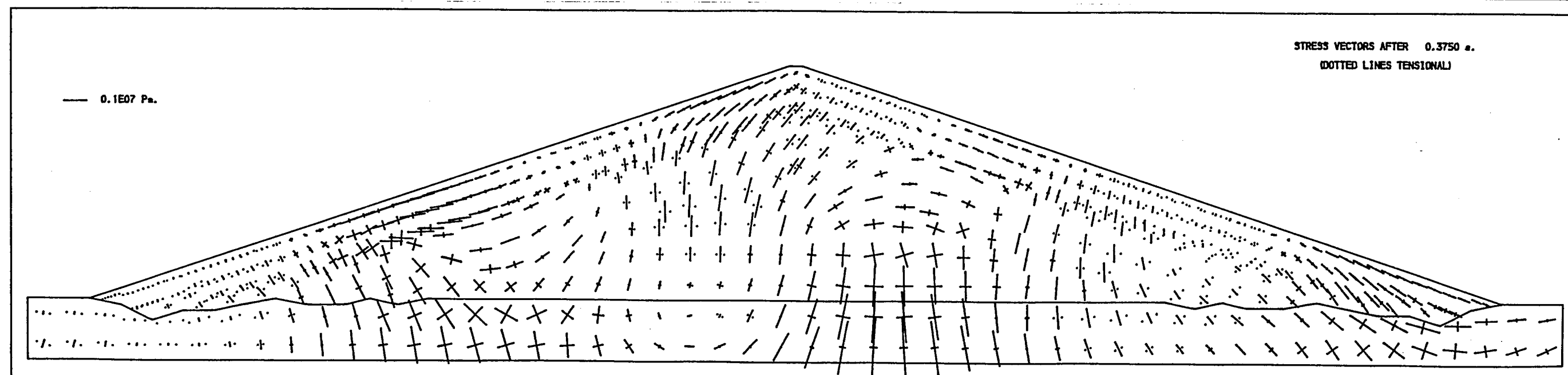
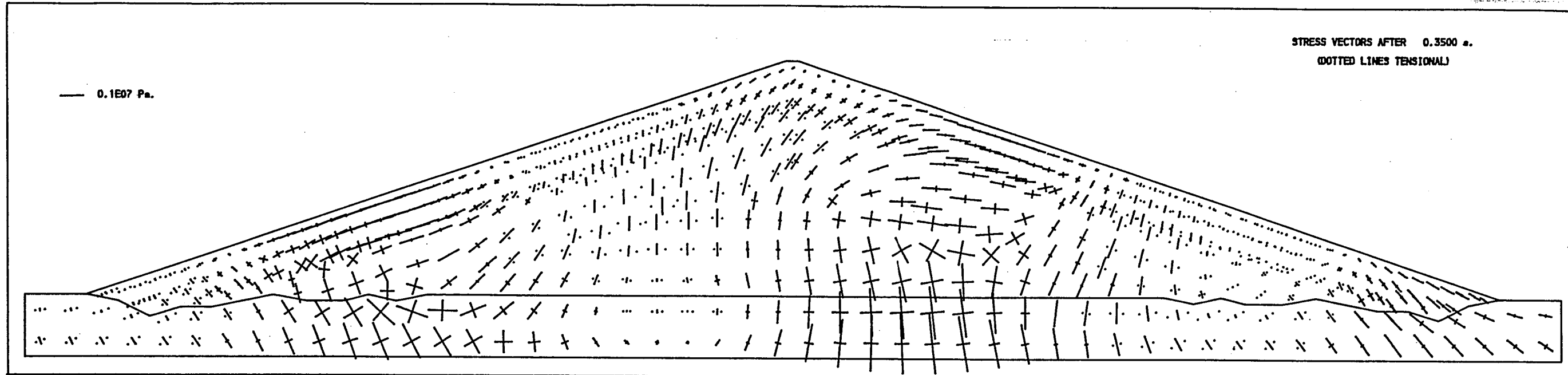
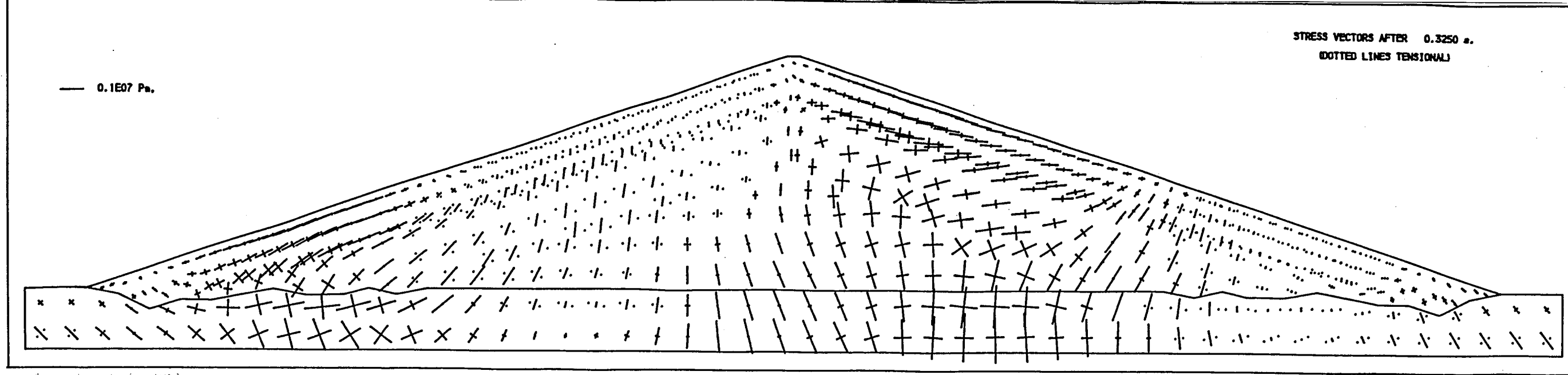










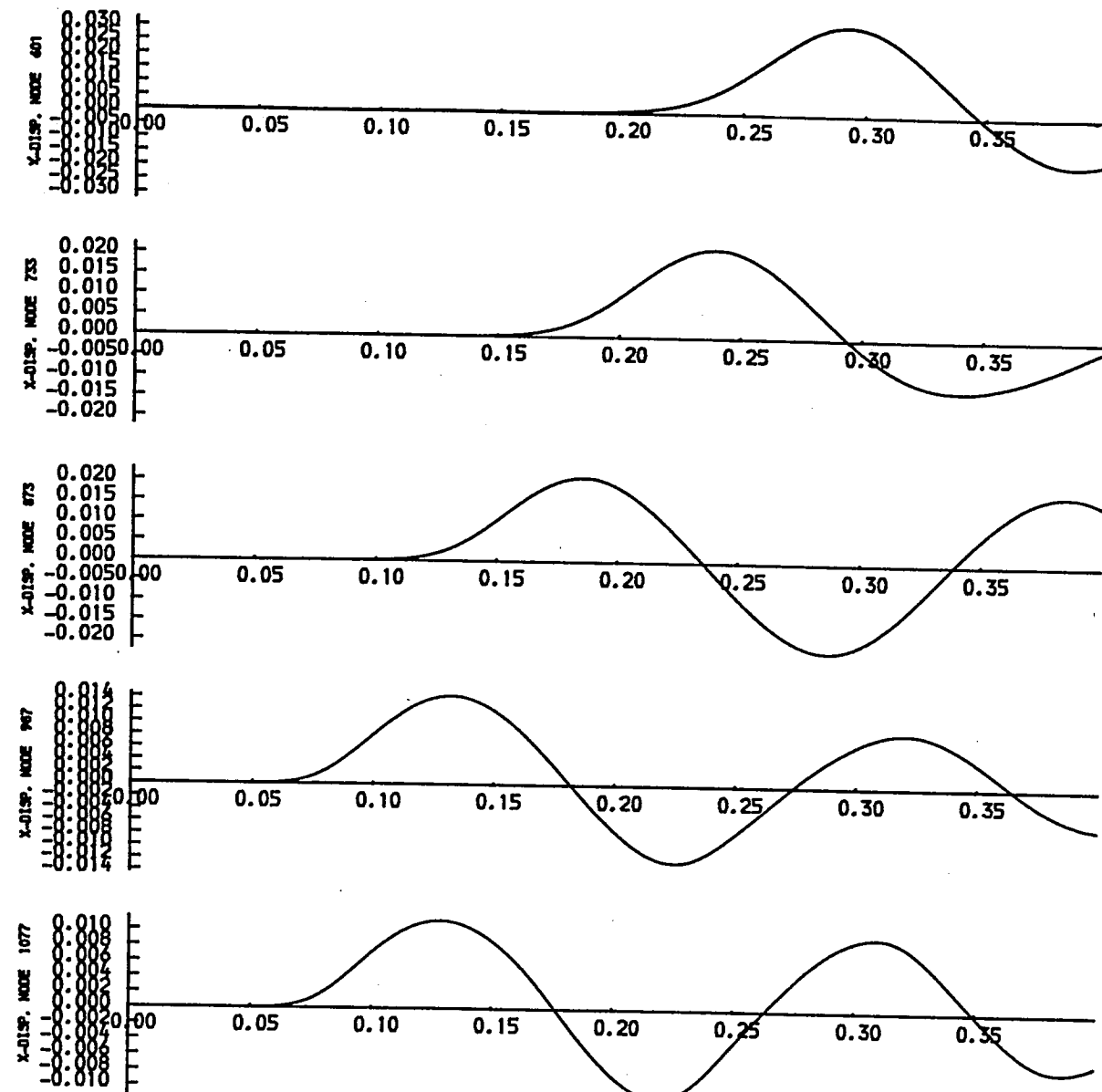
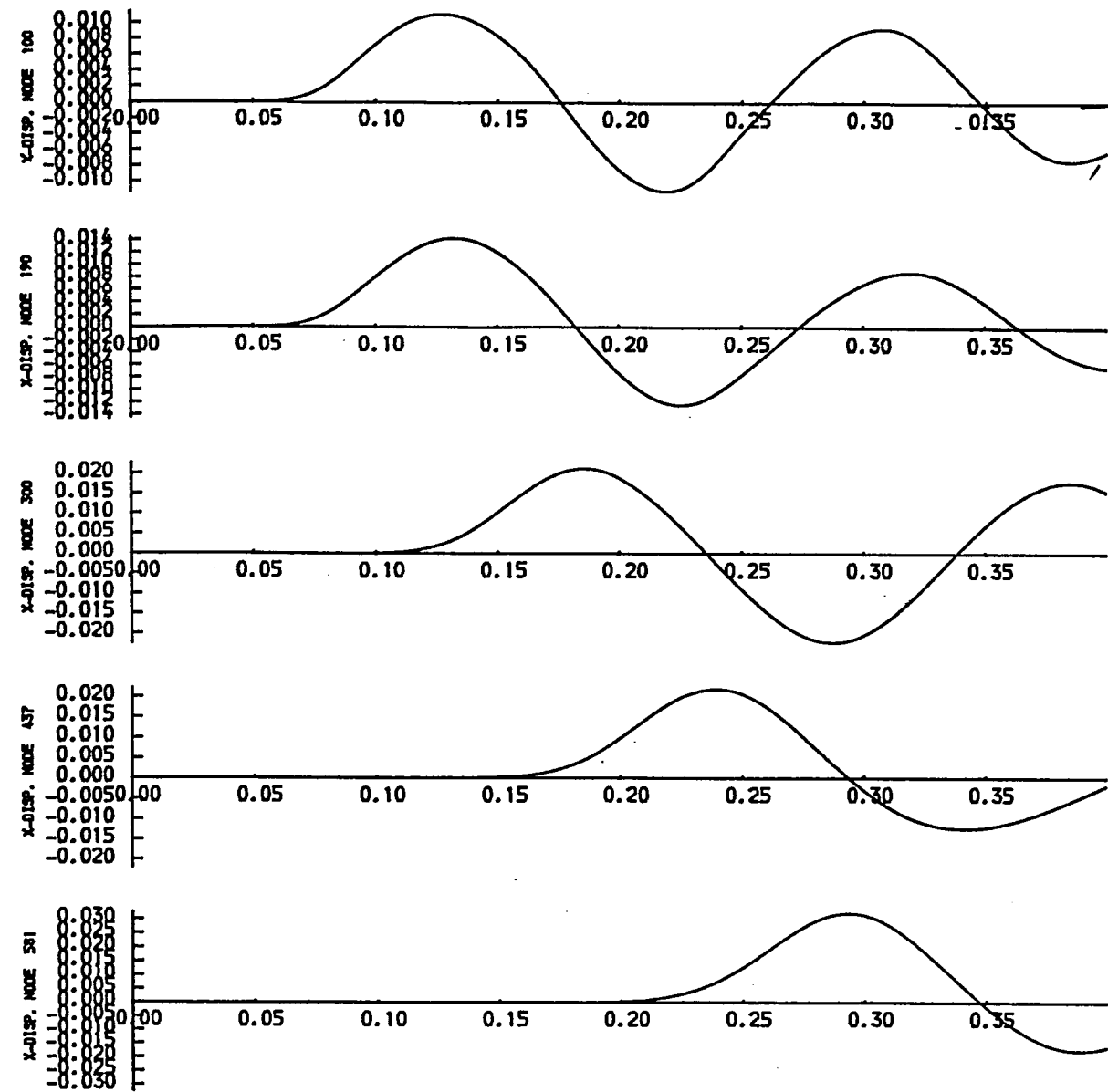


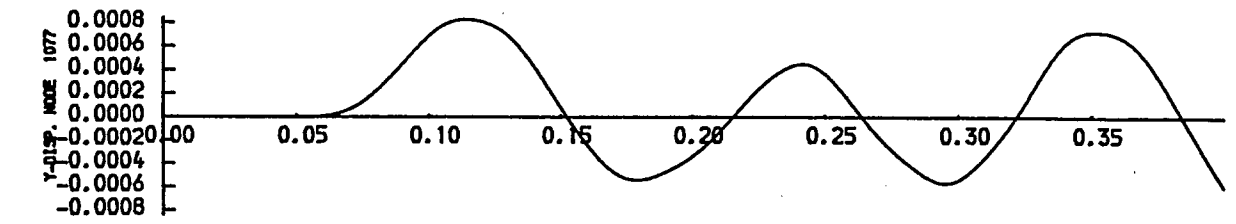
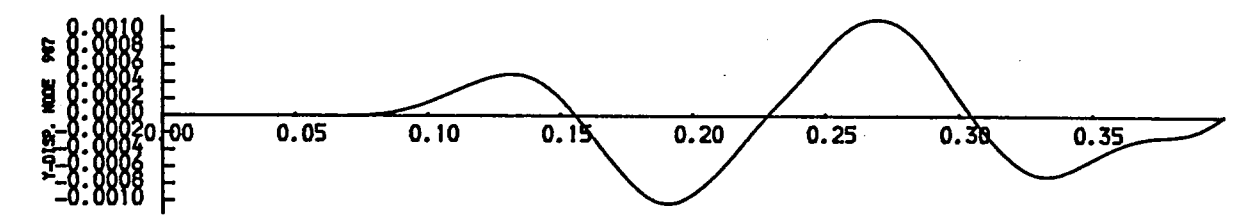
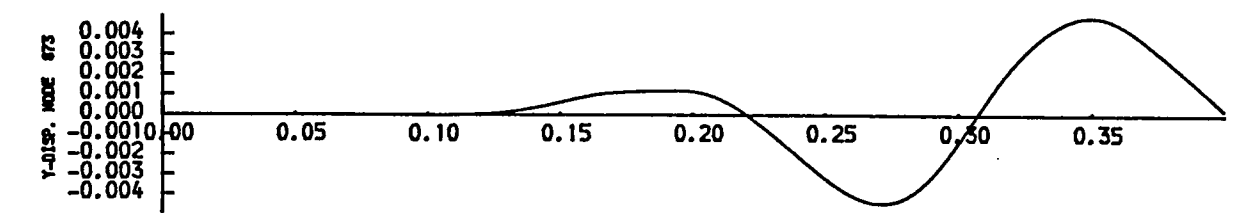
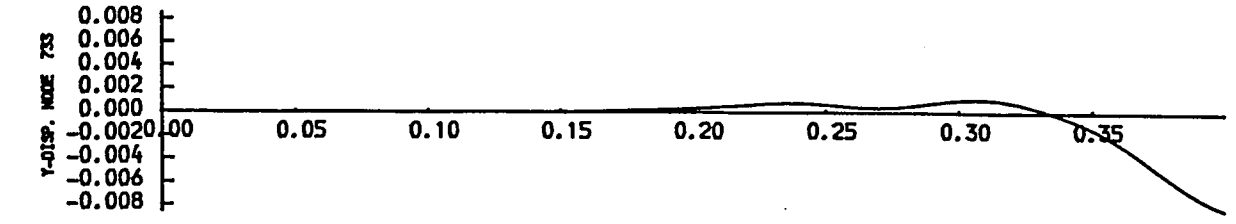
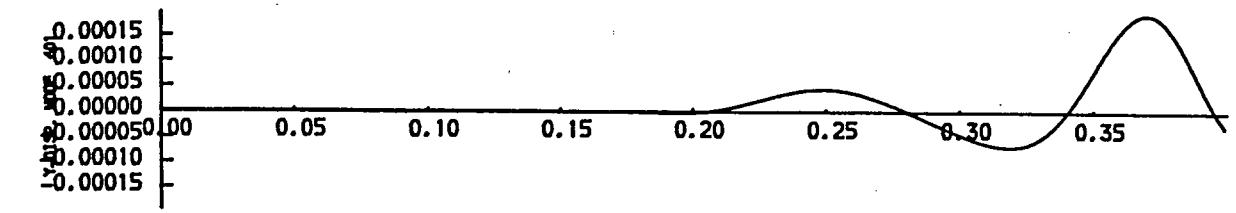
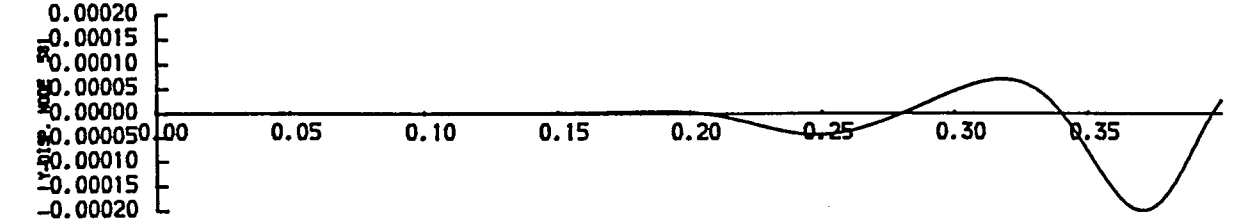
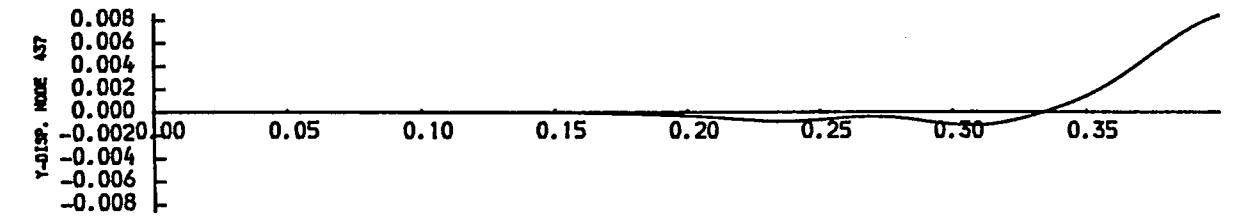
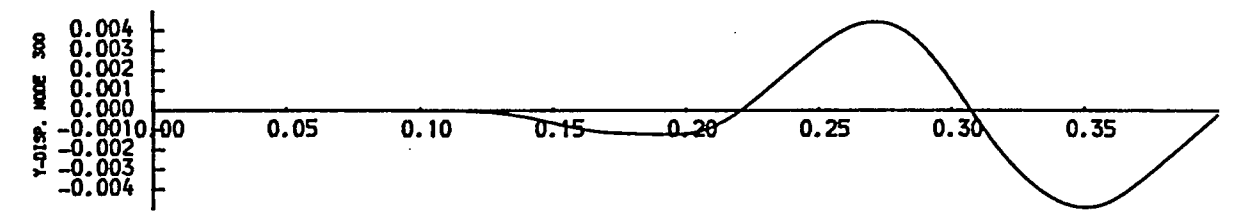
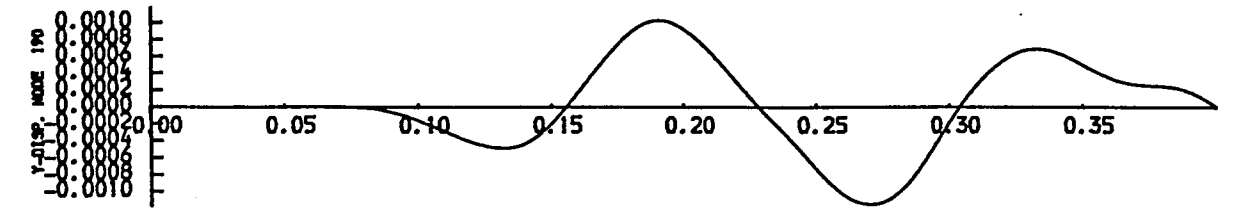
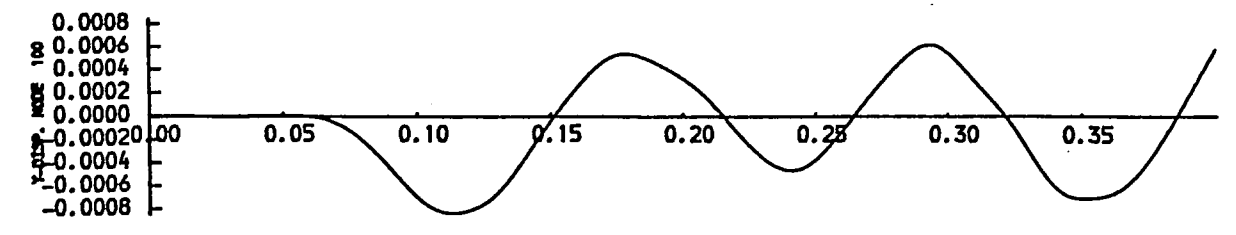
Time-displacement graphs and stress distributions for D2/7

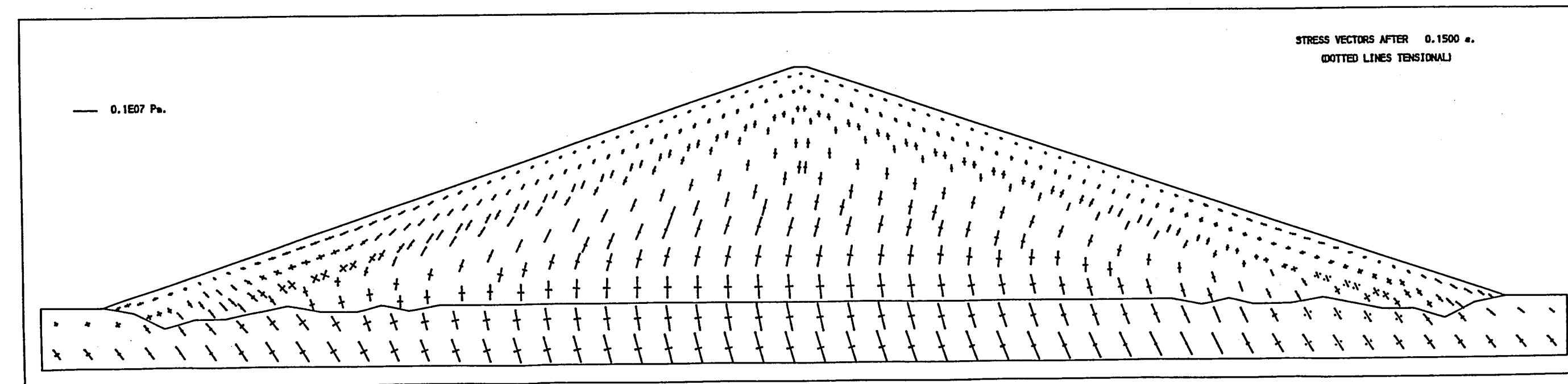
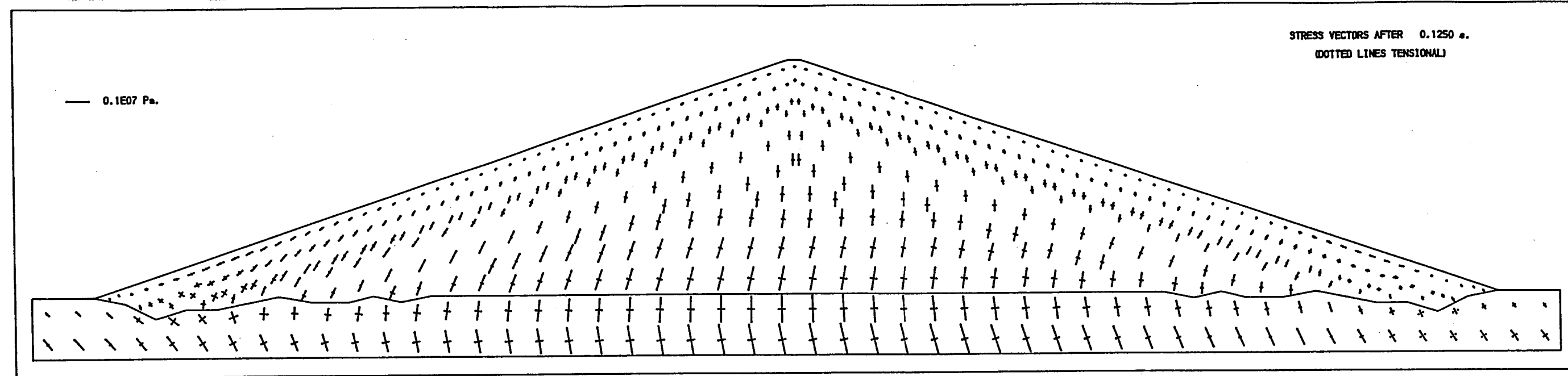
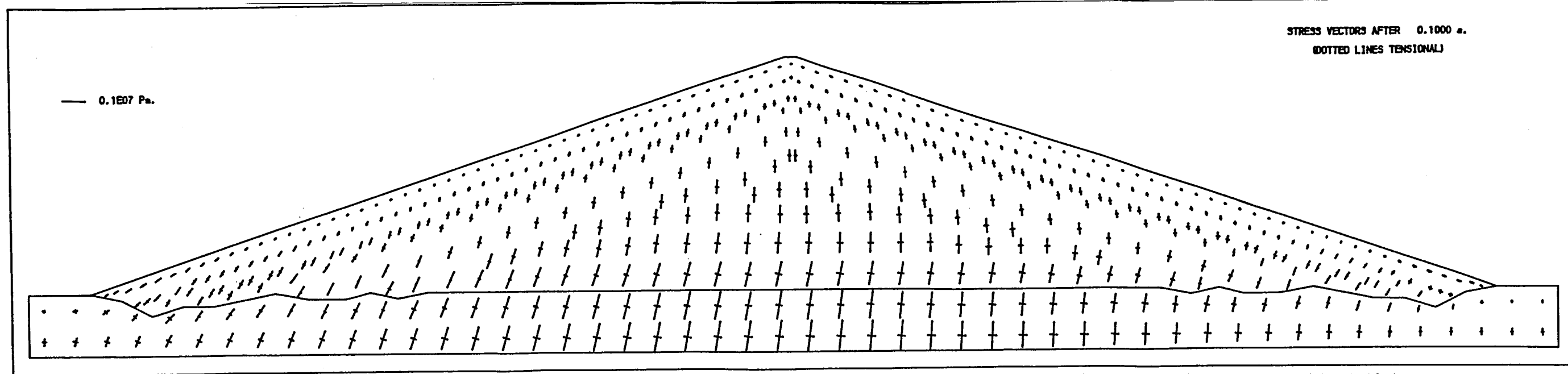
S-wave

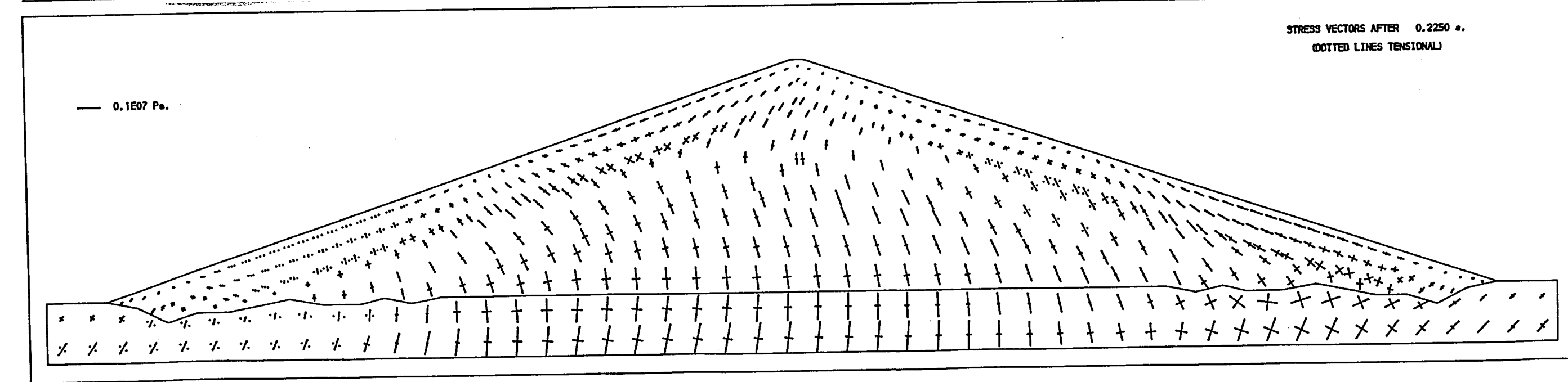
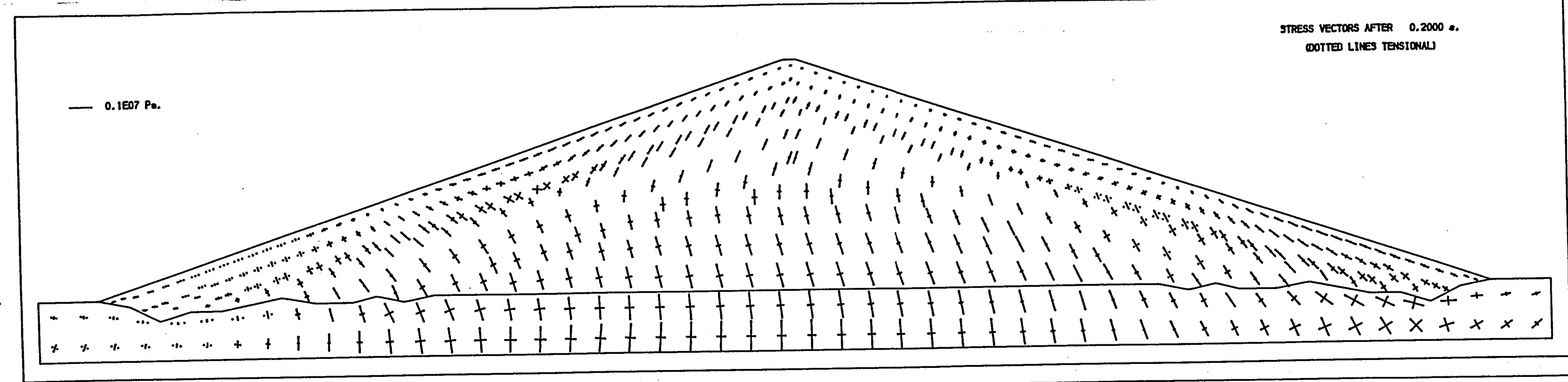
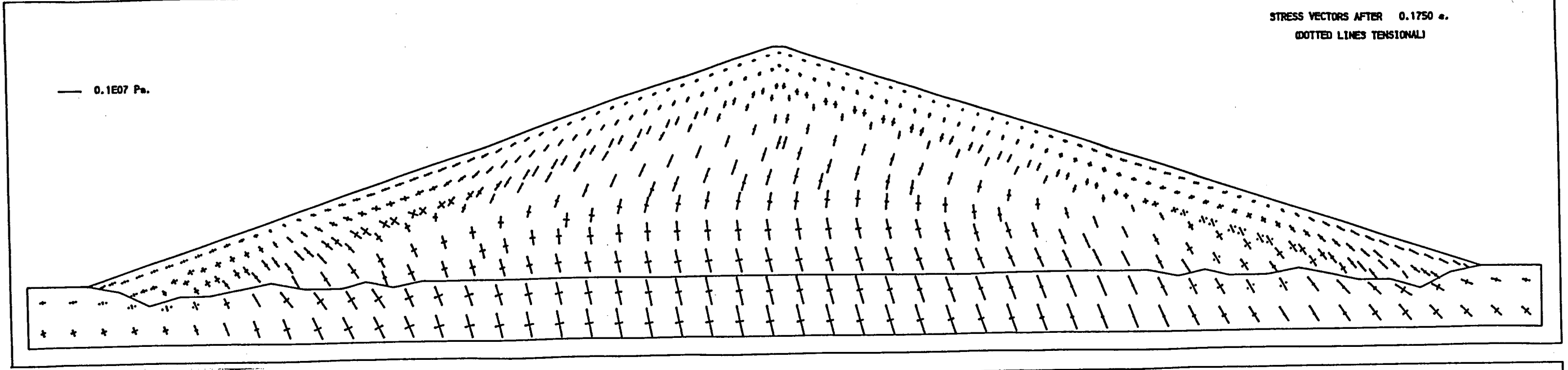
Angle of incidence 0°

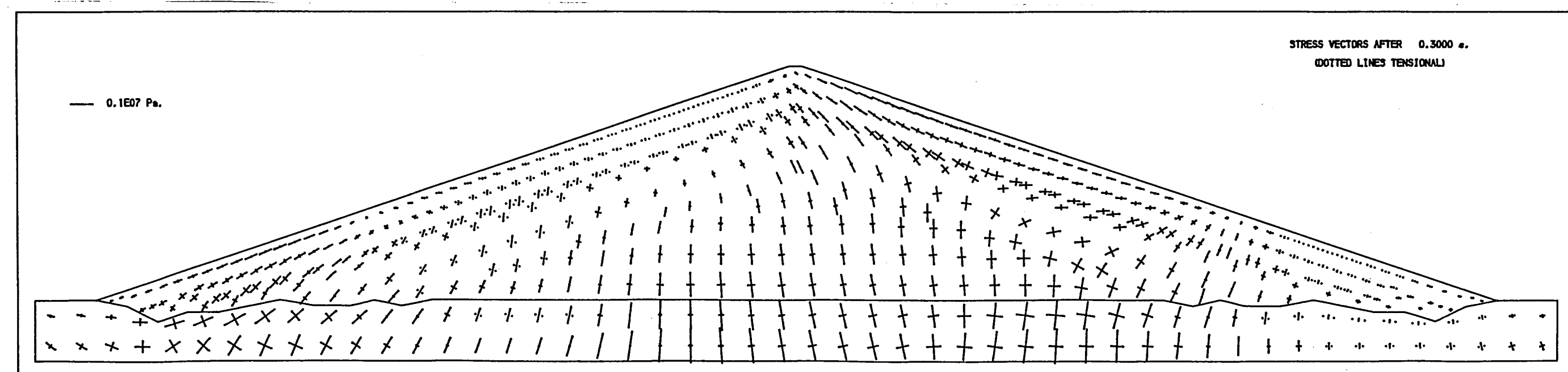
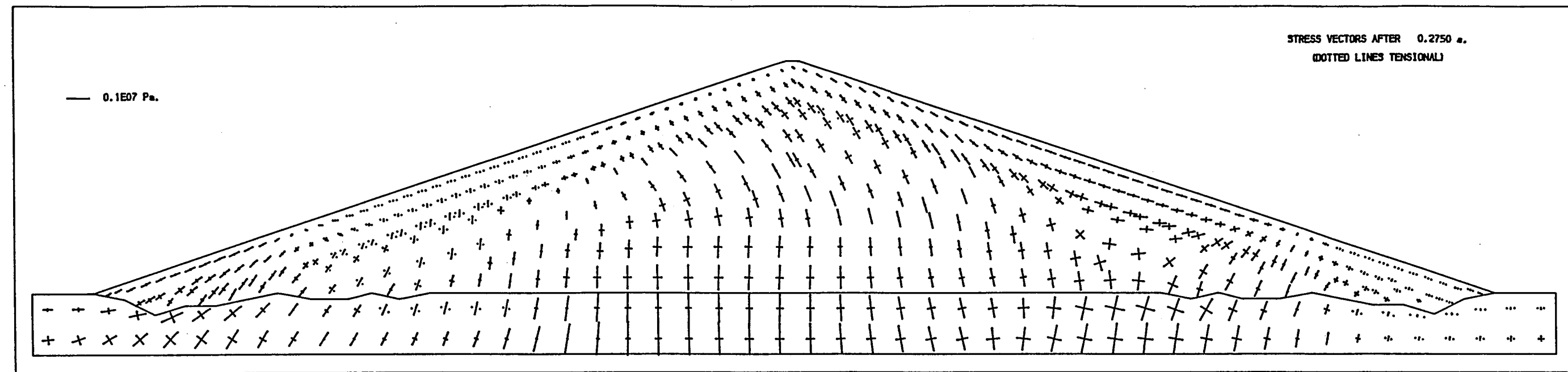
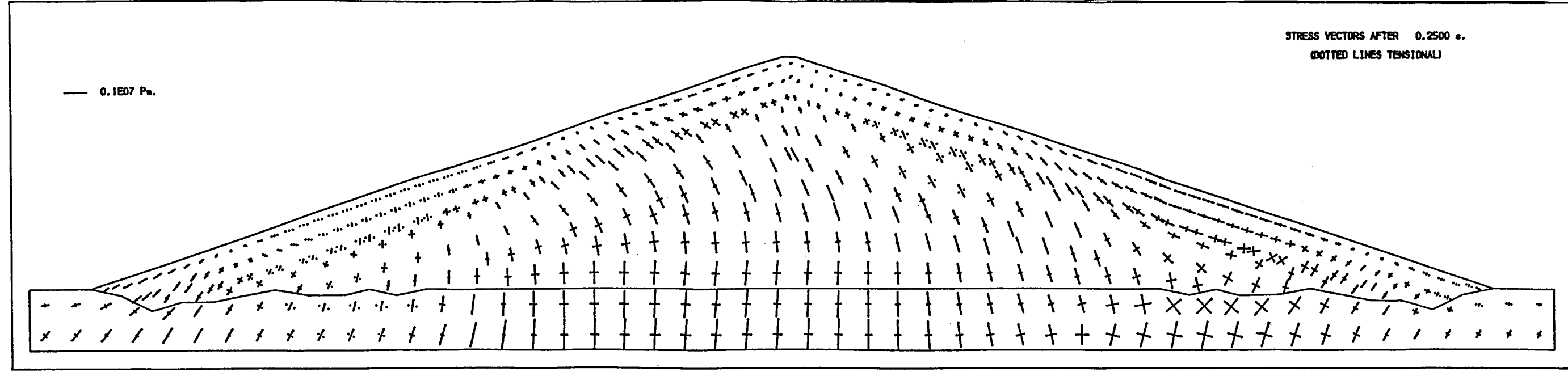
Base acceleration $\frac{1}{2}g$

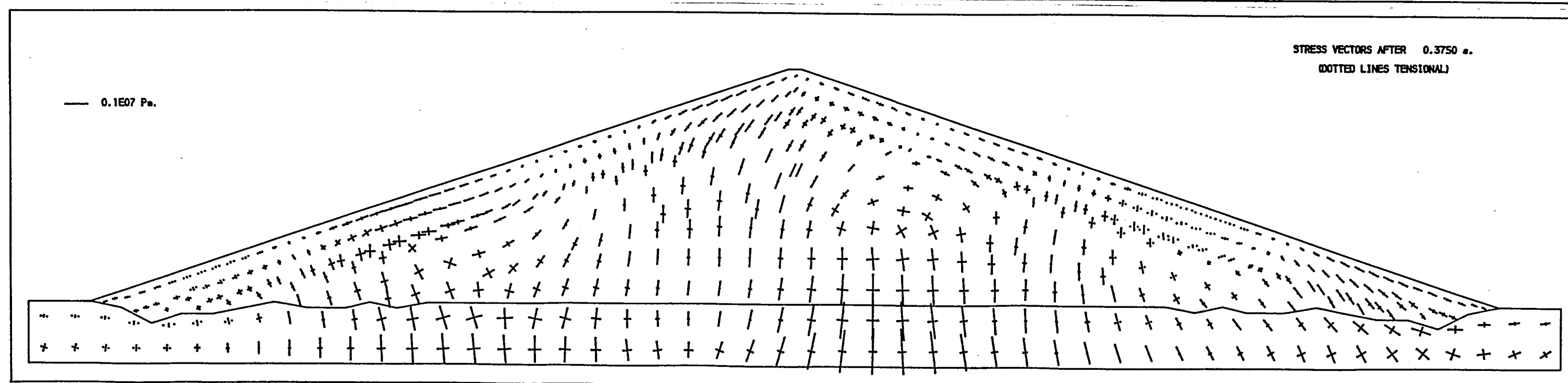
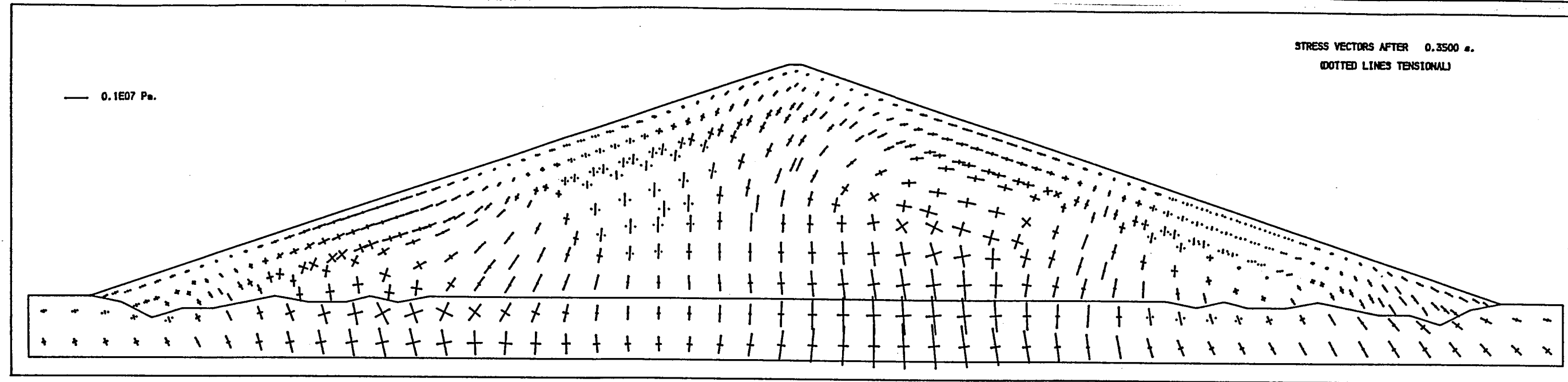
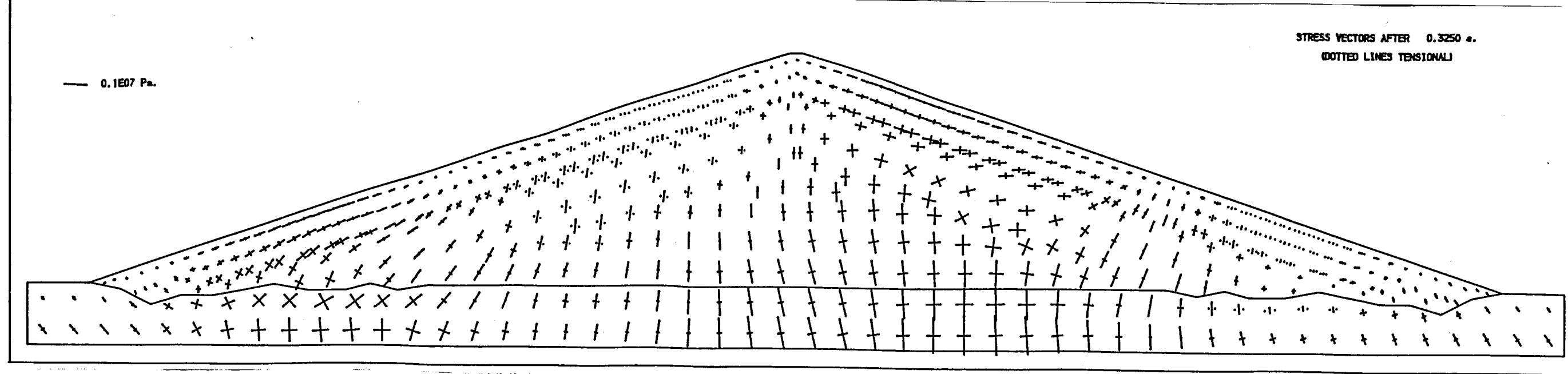










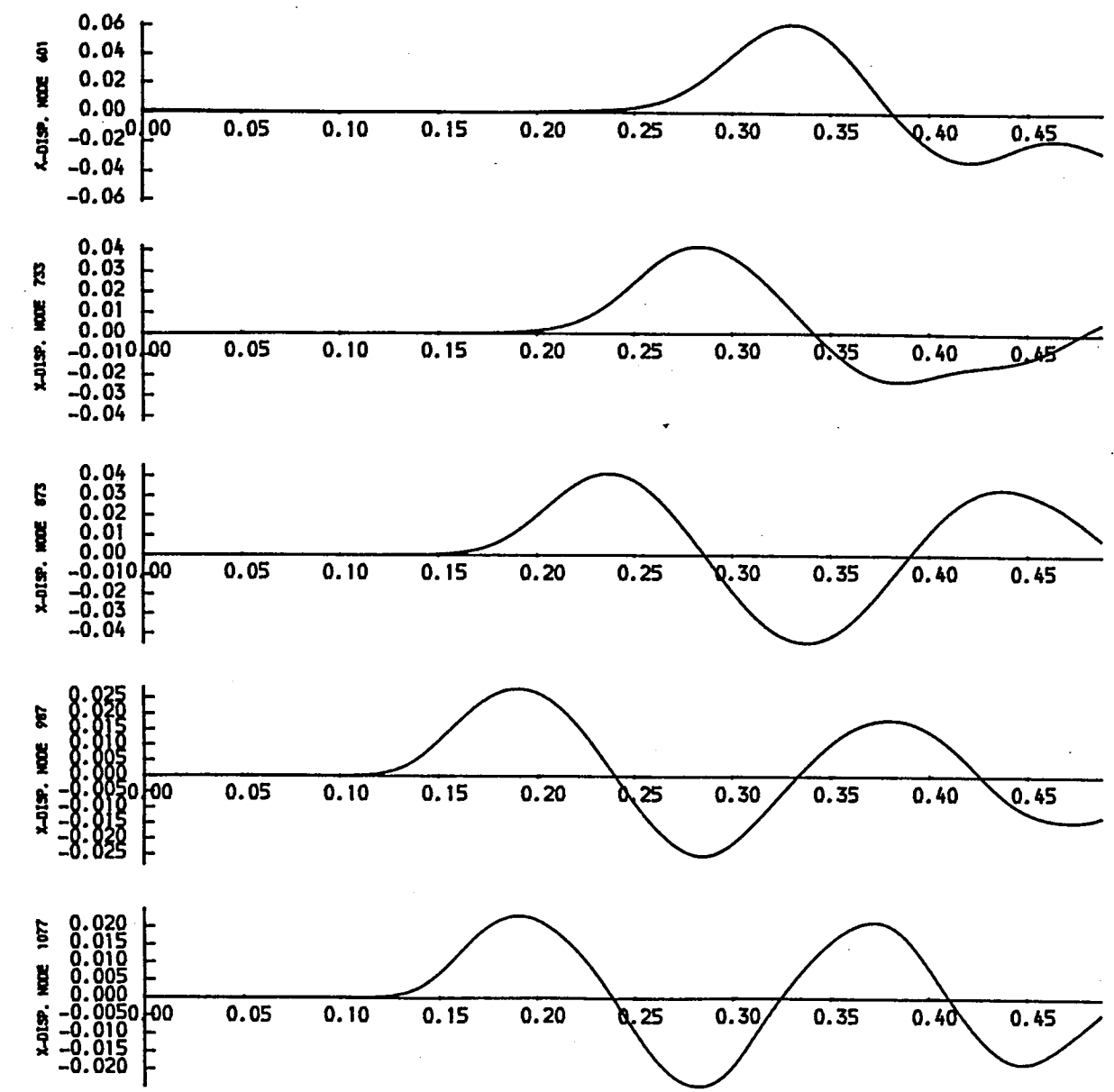
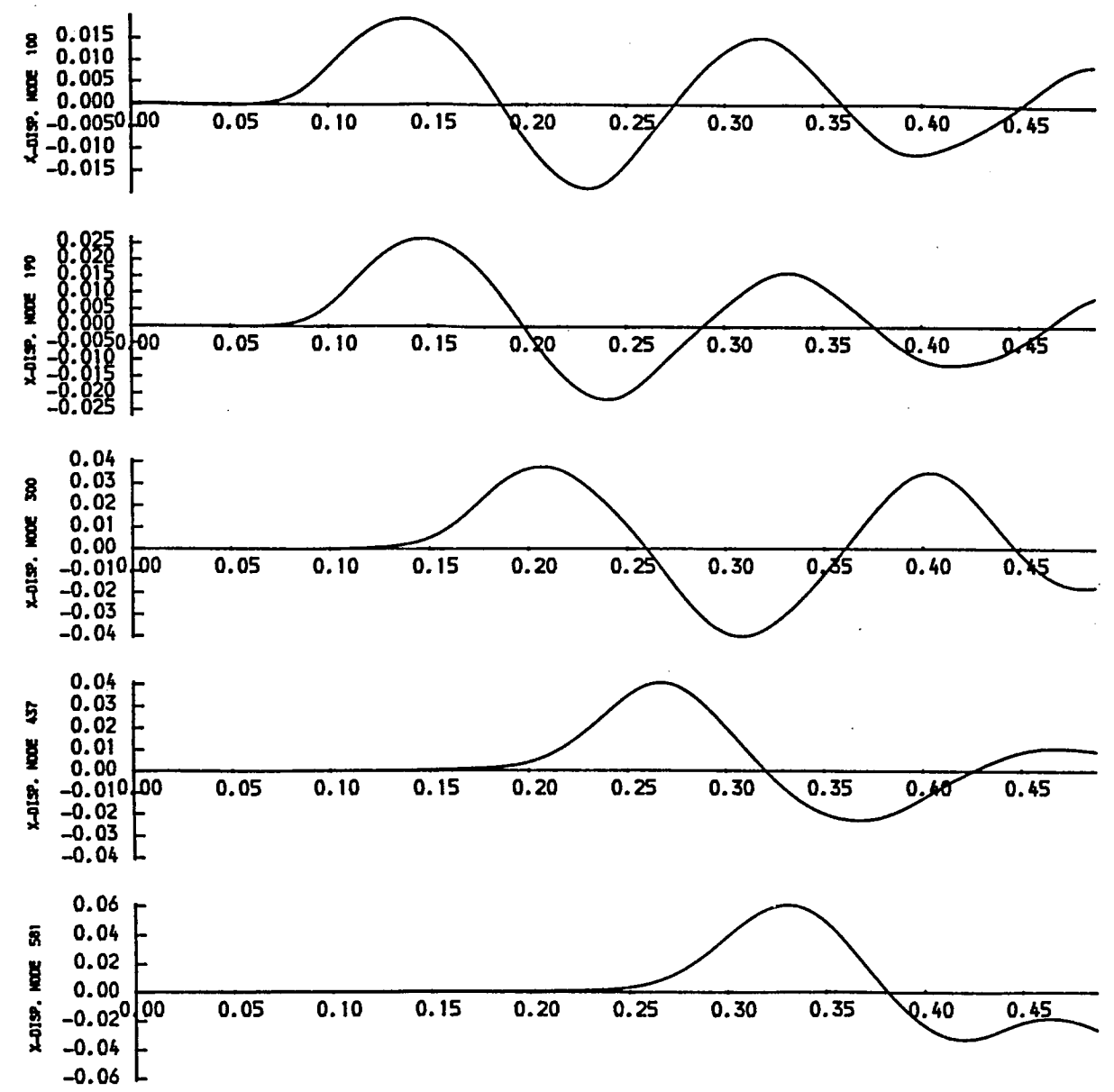


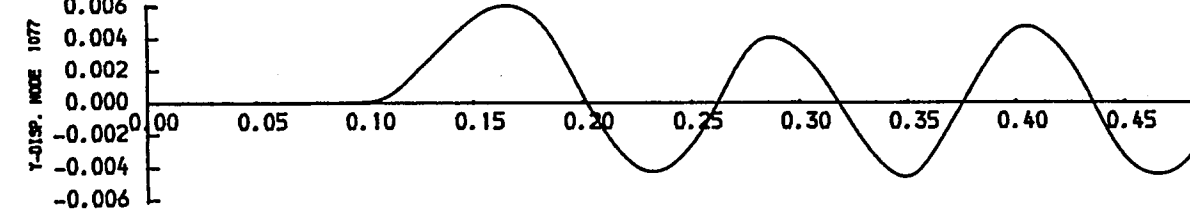
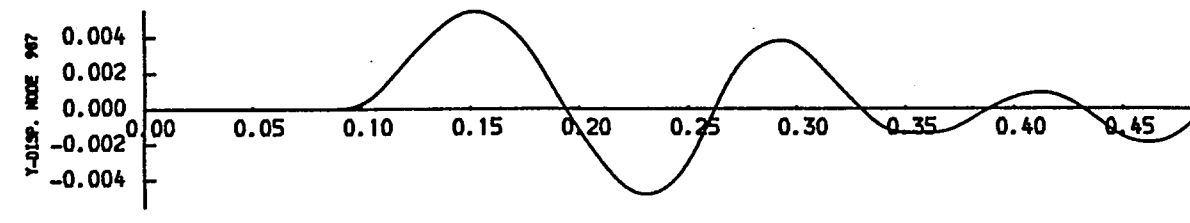
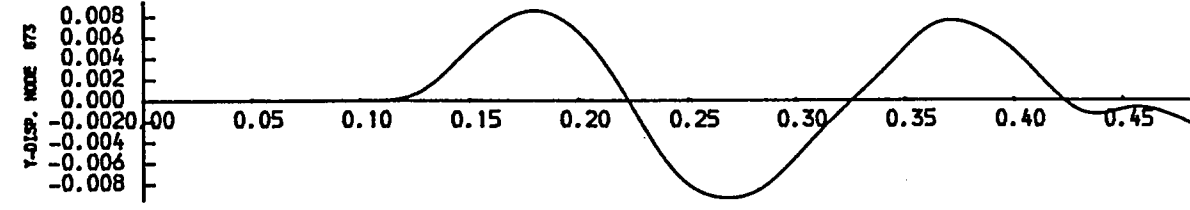
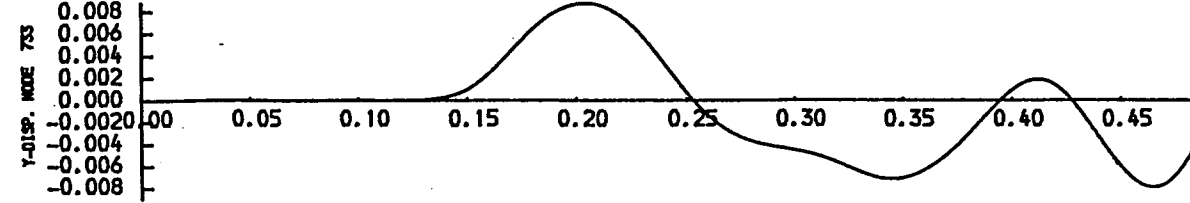
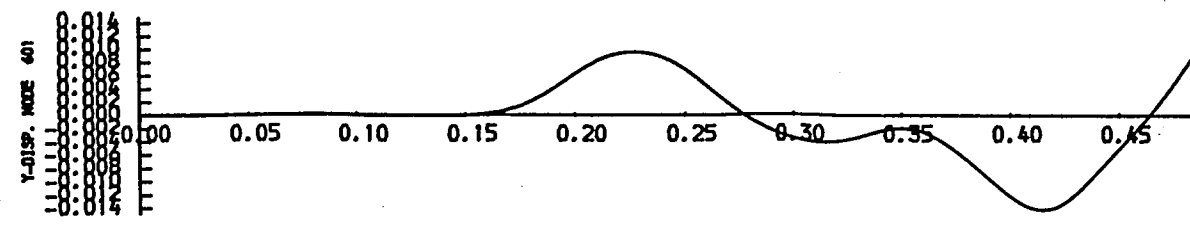
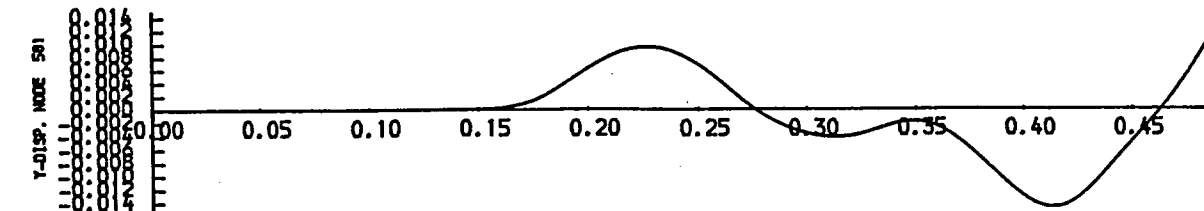
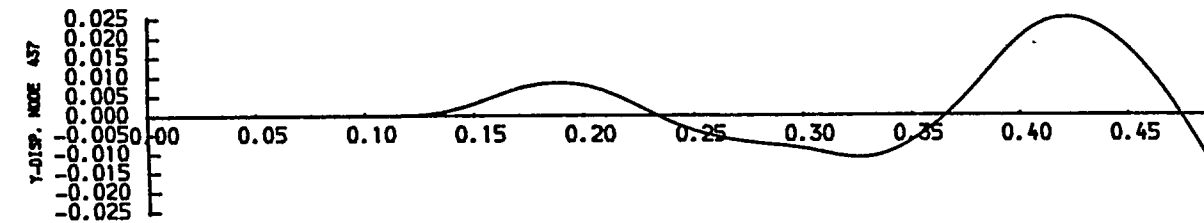
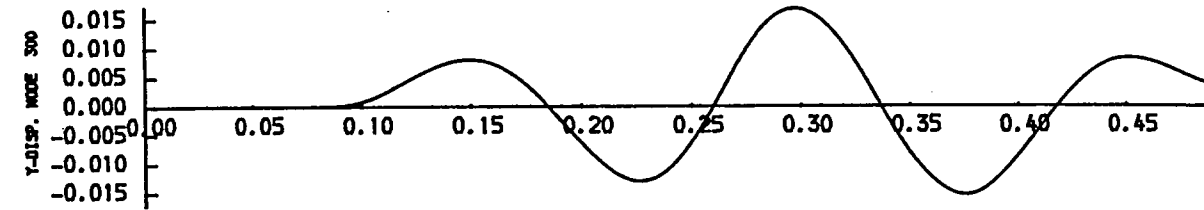
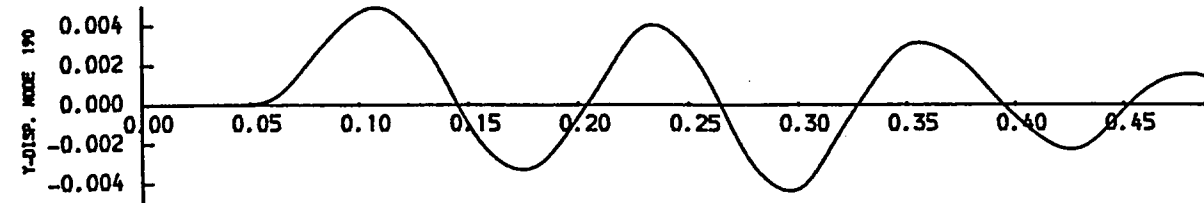
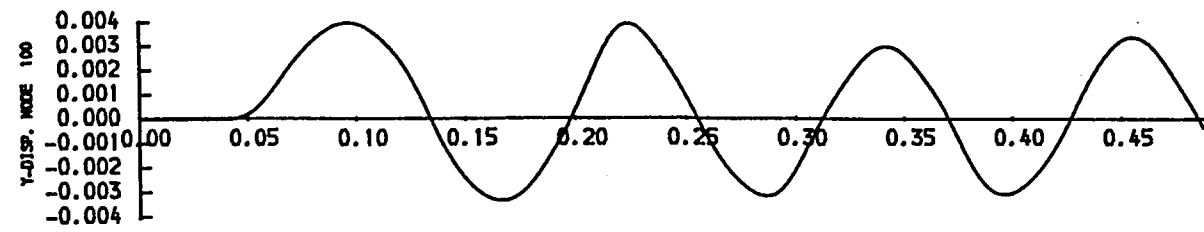
Time-displacement graphs and stress distributions for Ω/β

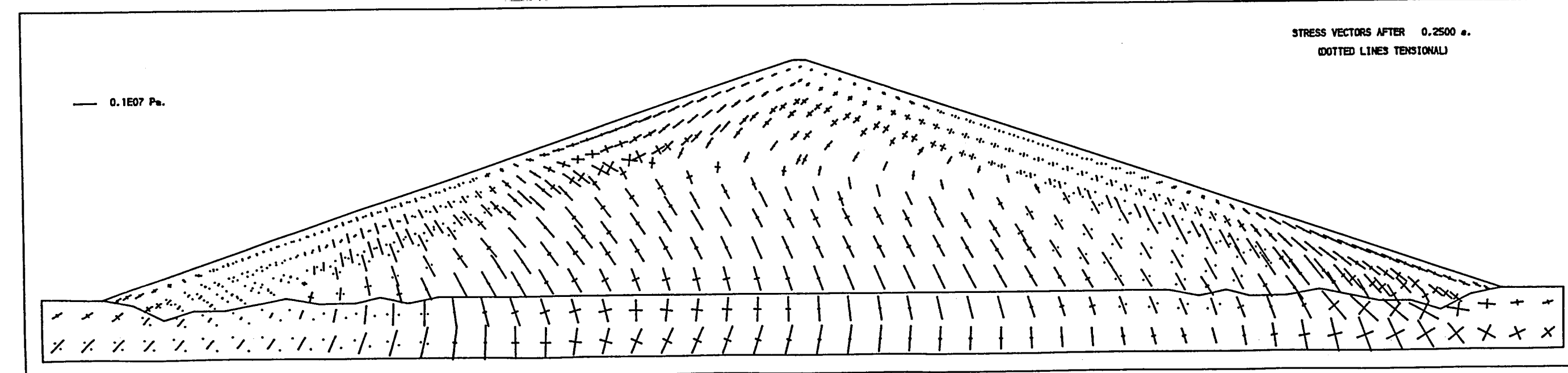
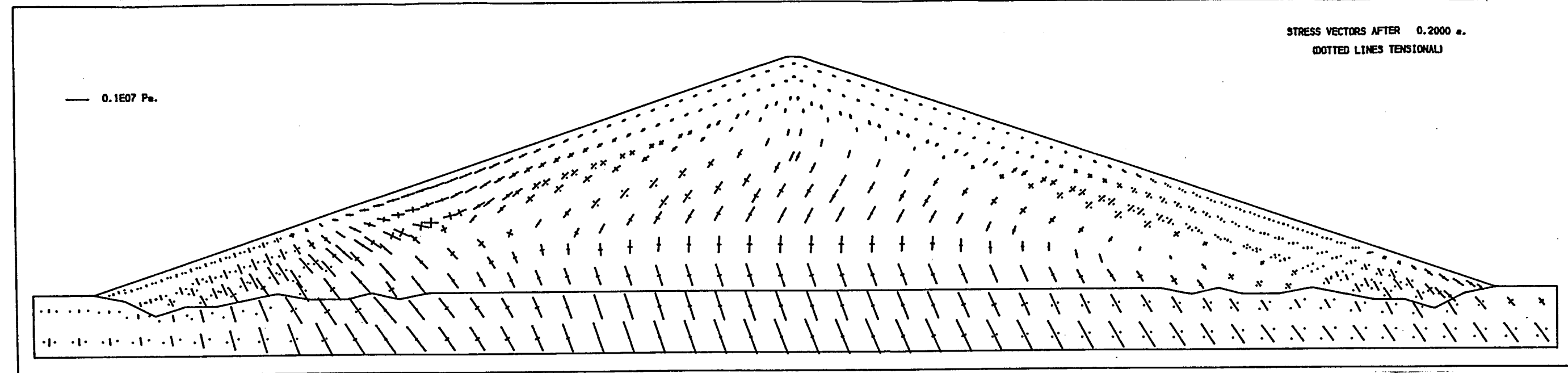
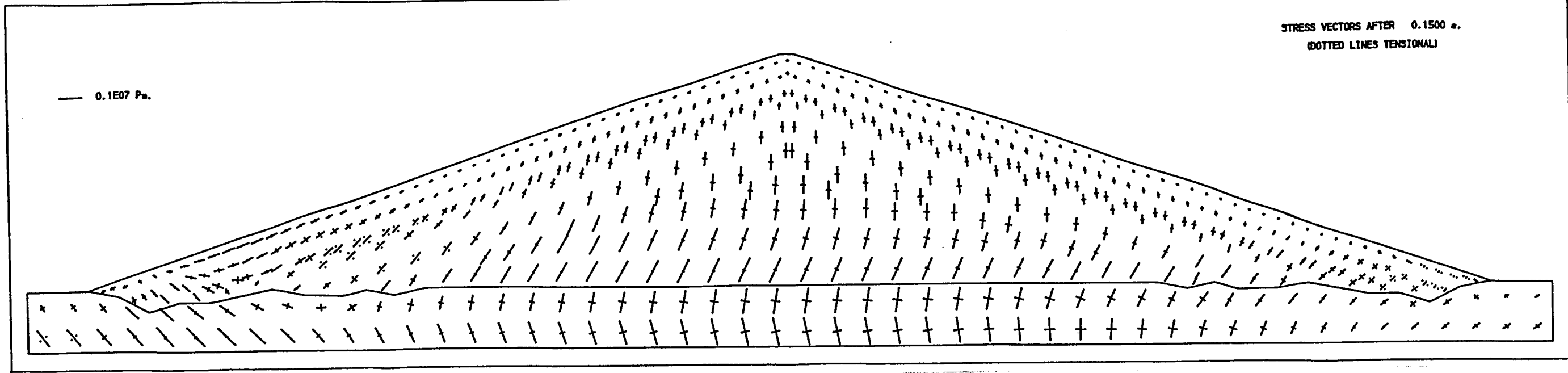
S-wave

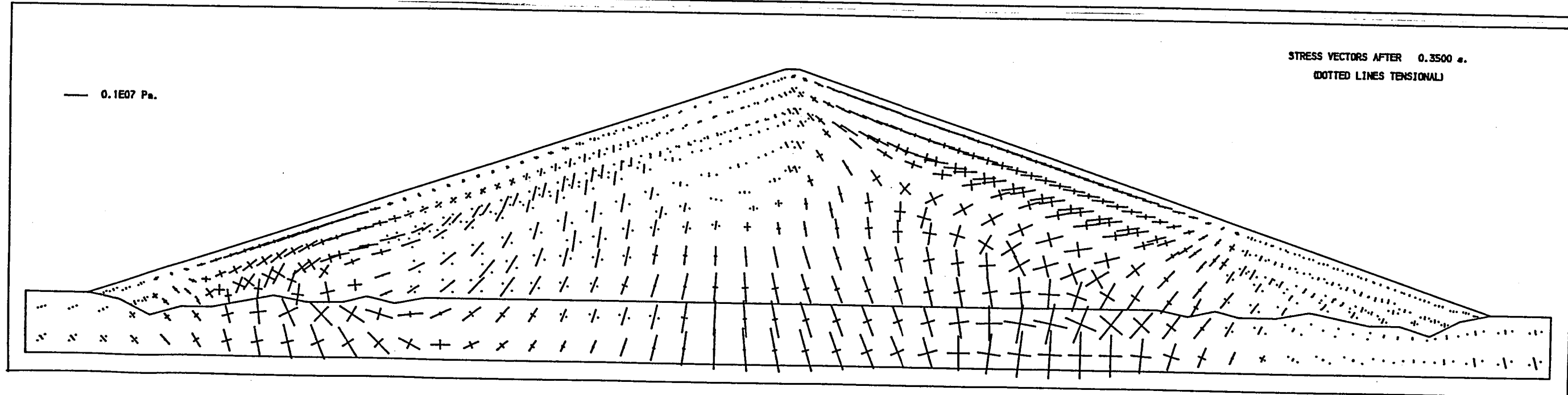
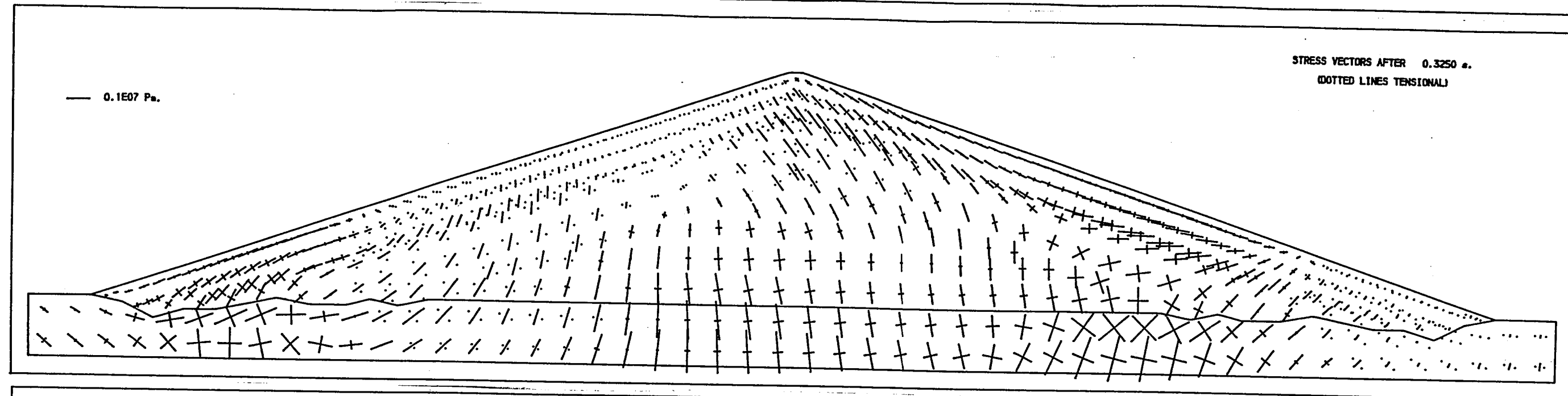
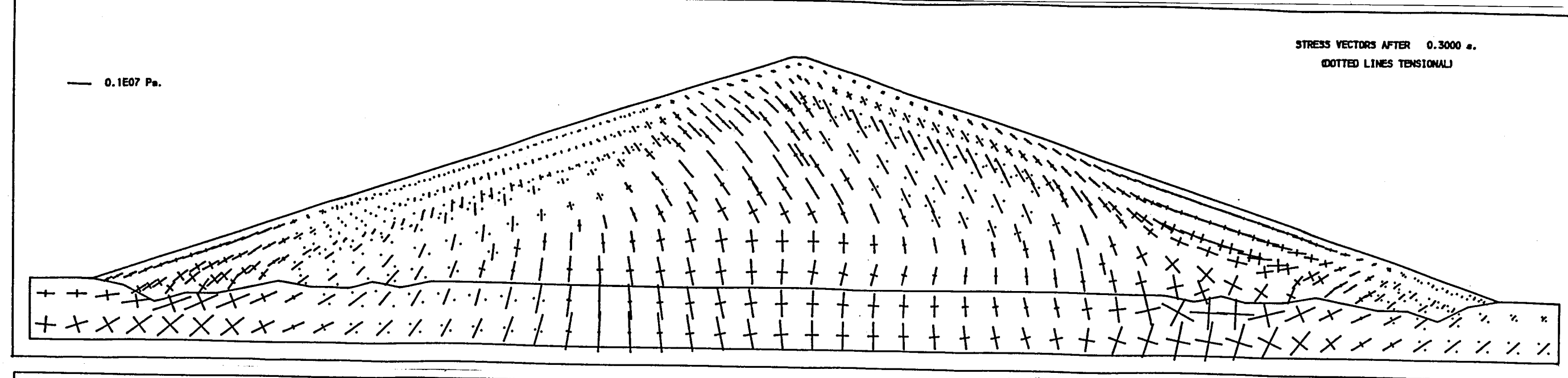
Angle of incidence 10°

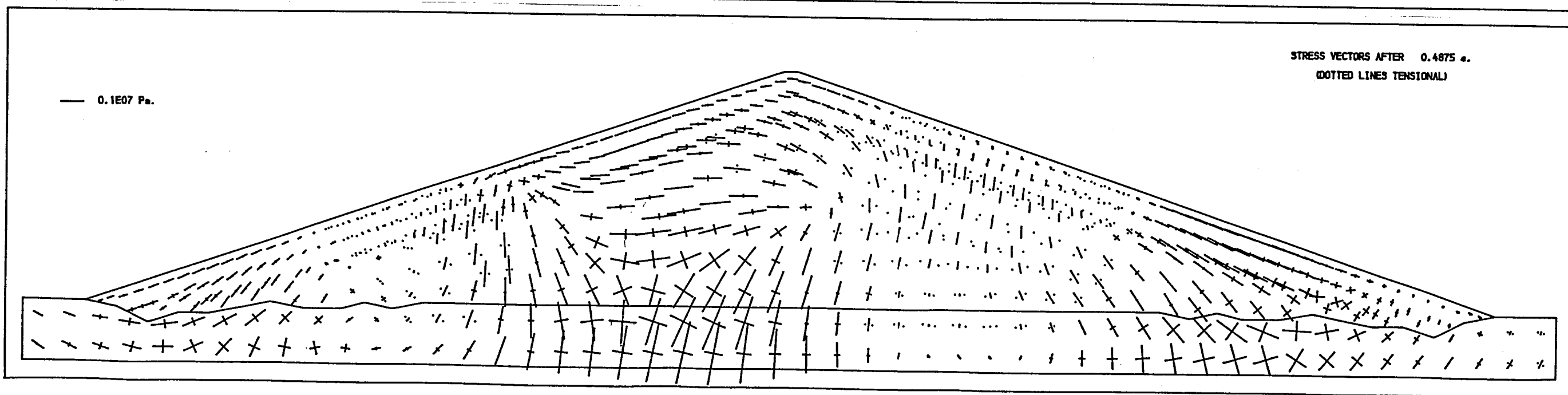
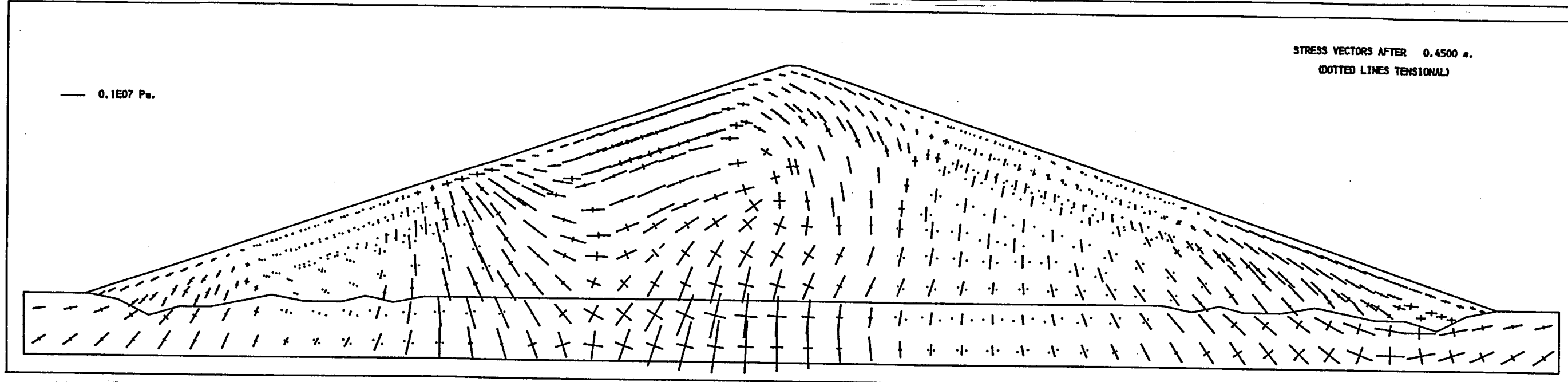
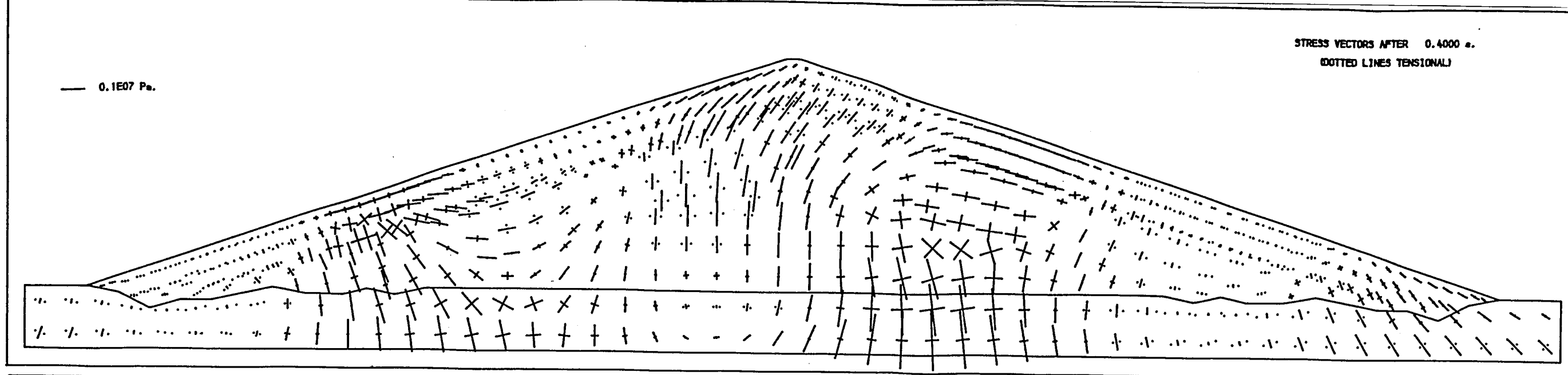
Base acceleration g









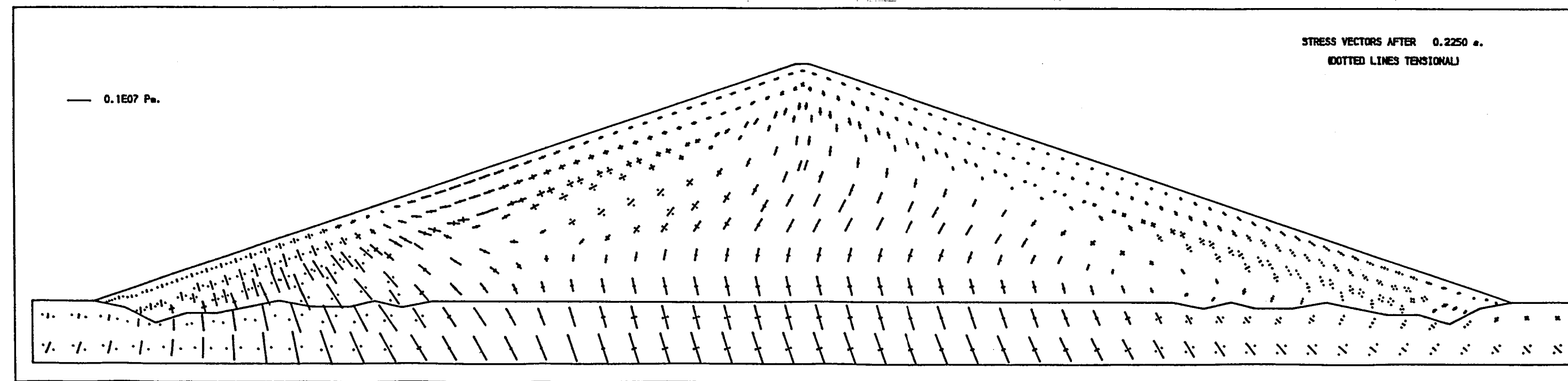
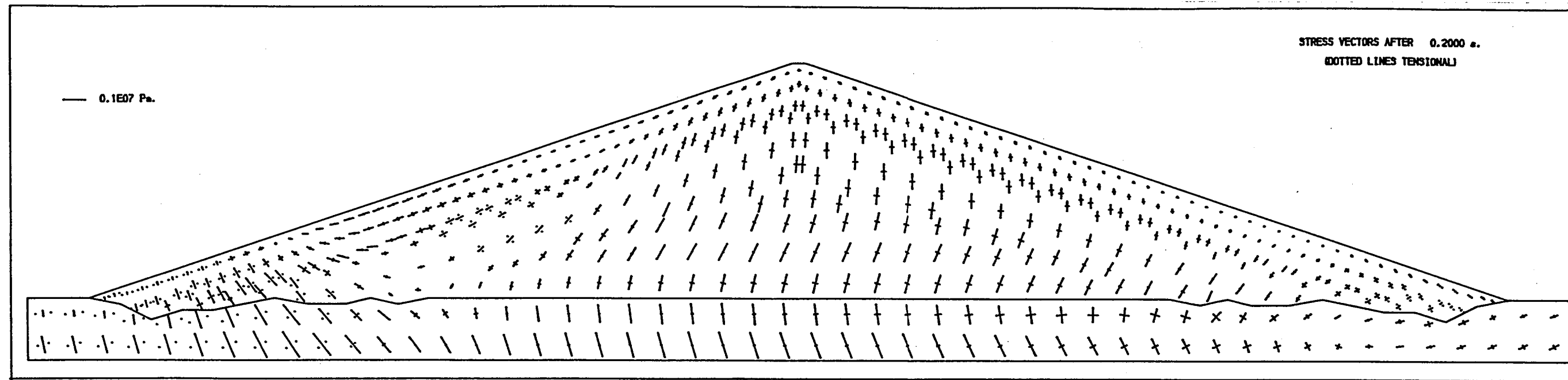
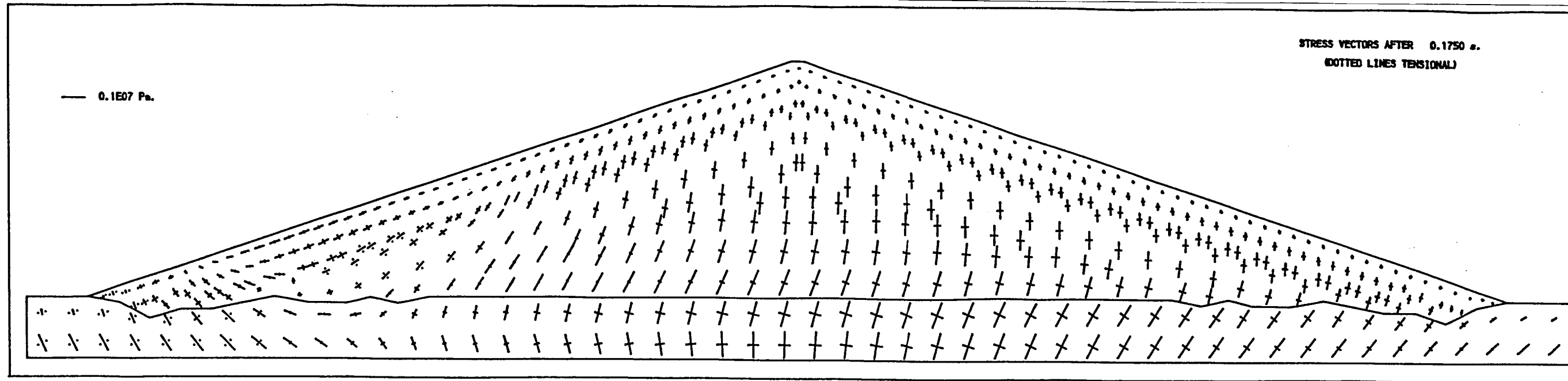


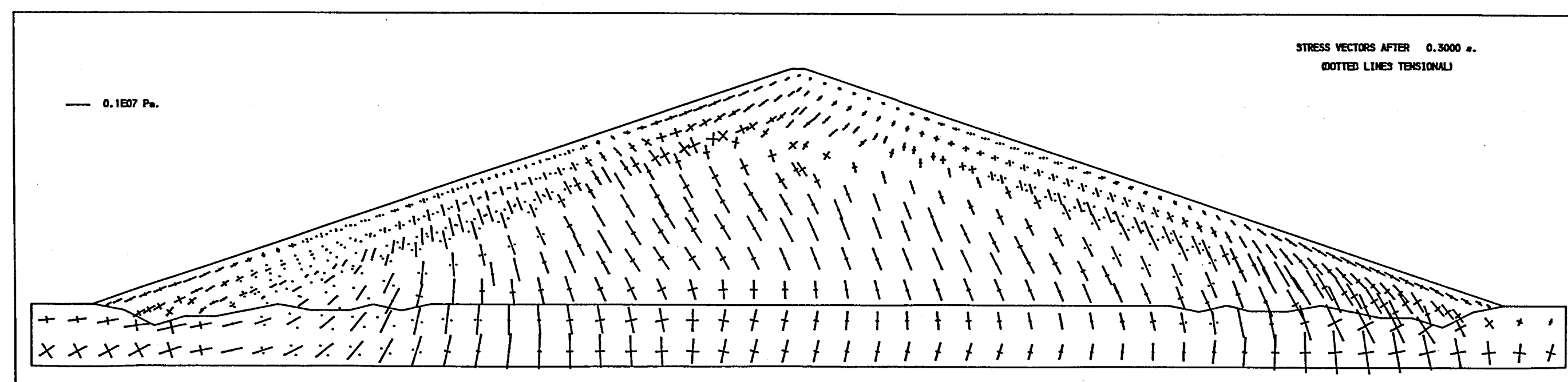
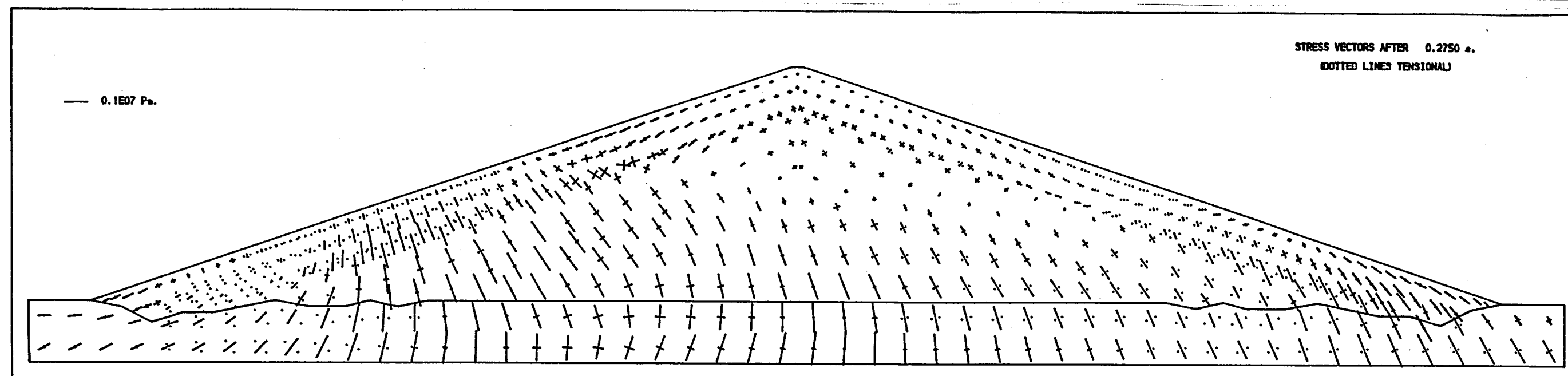
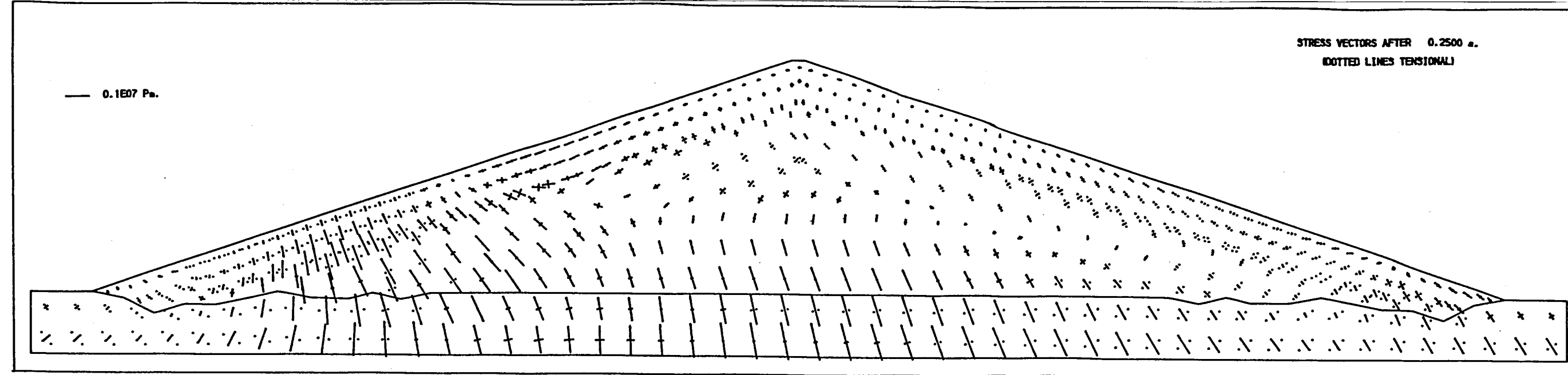
Stress distributions for D2/9

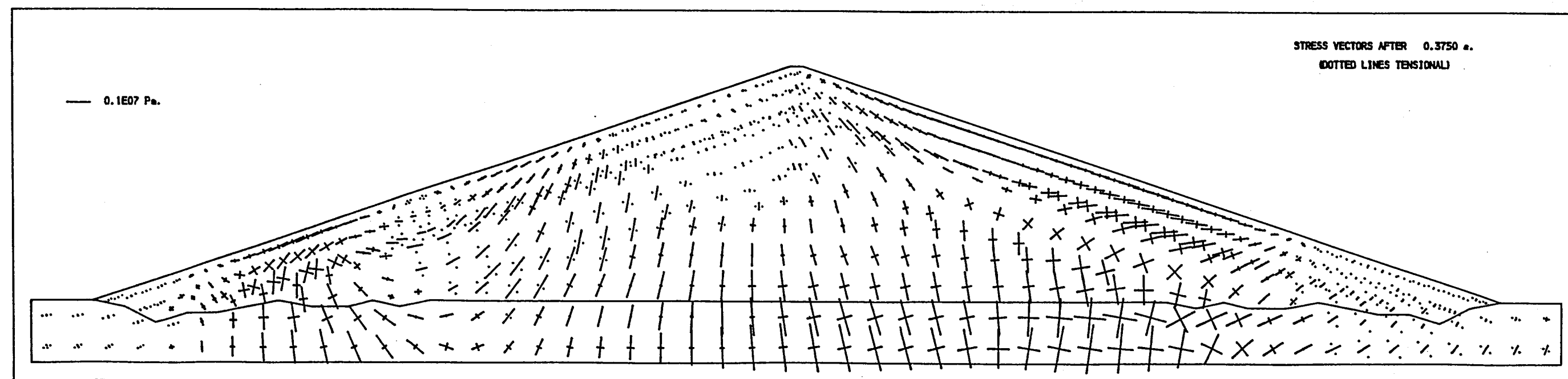
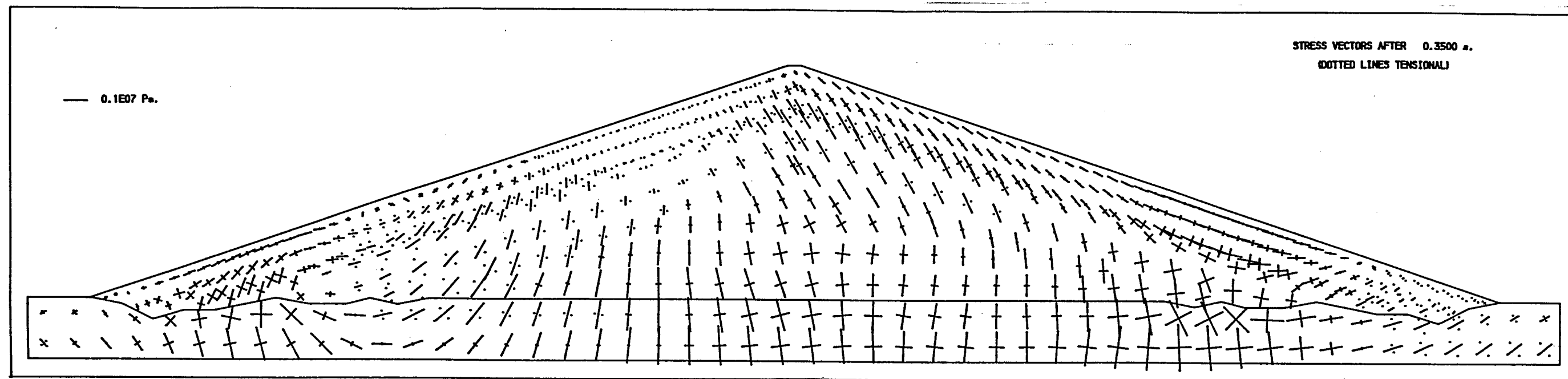
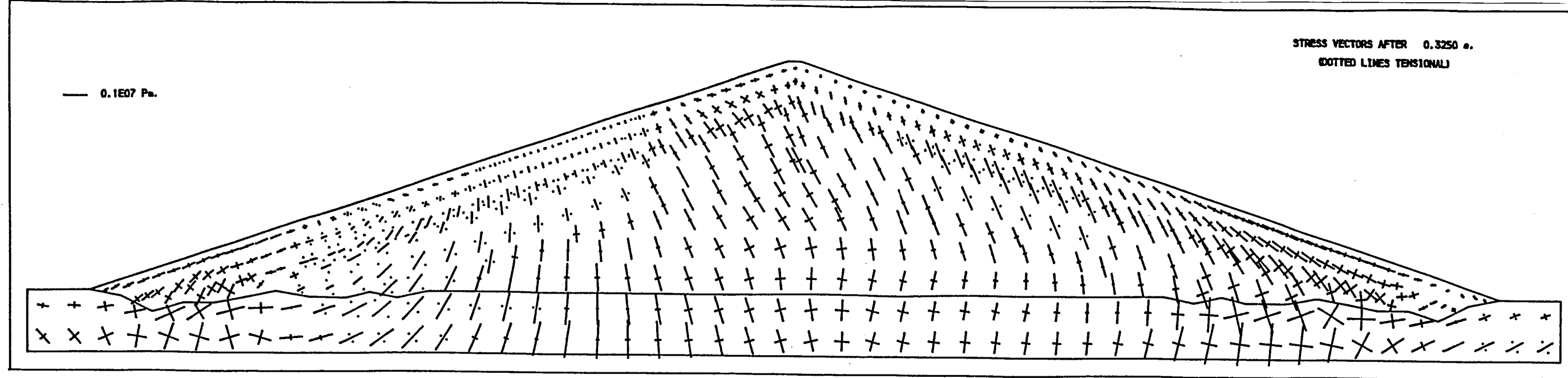
S-wave

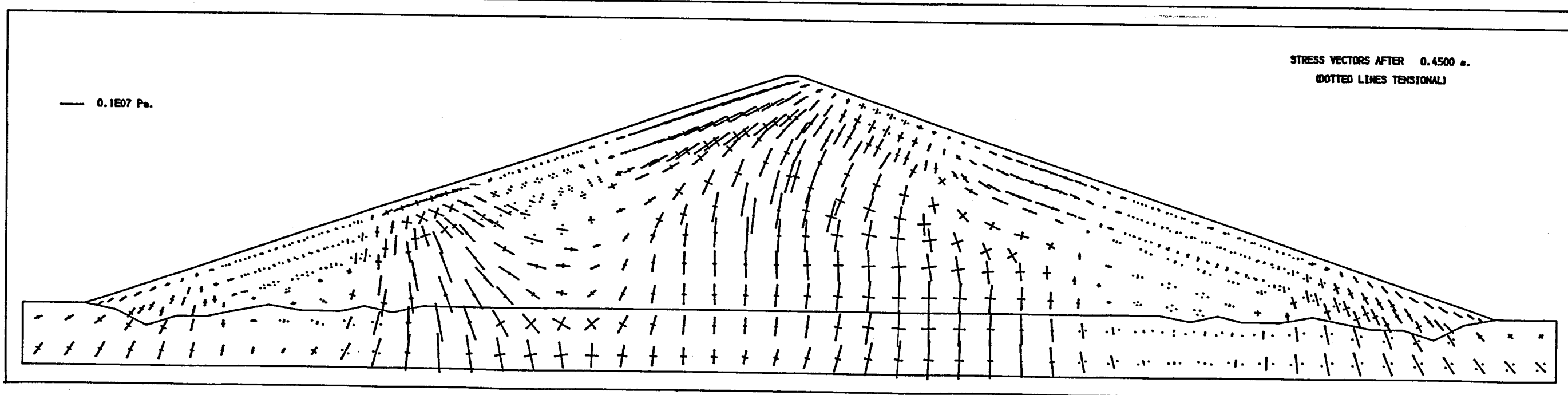
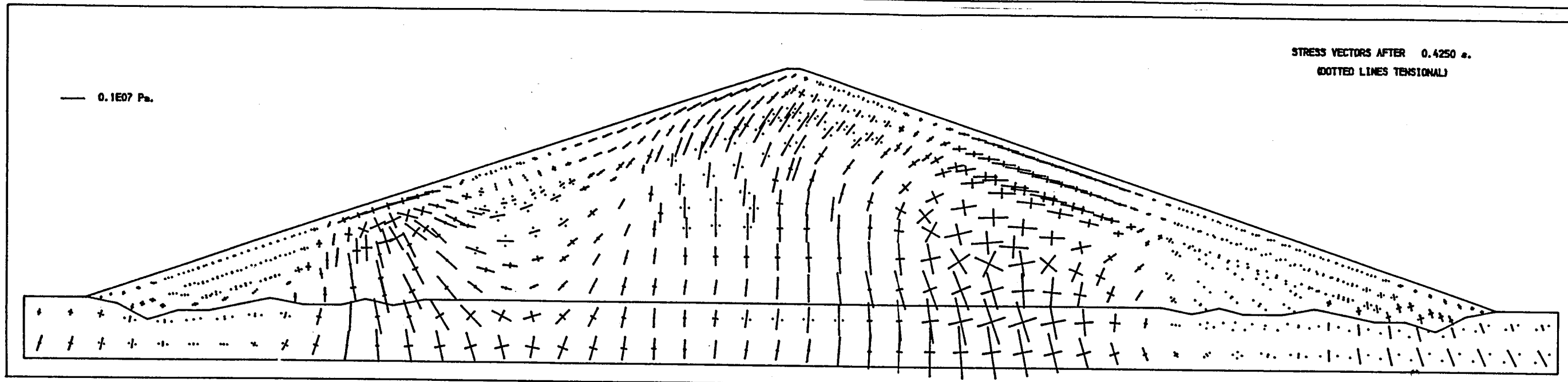
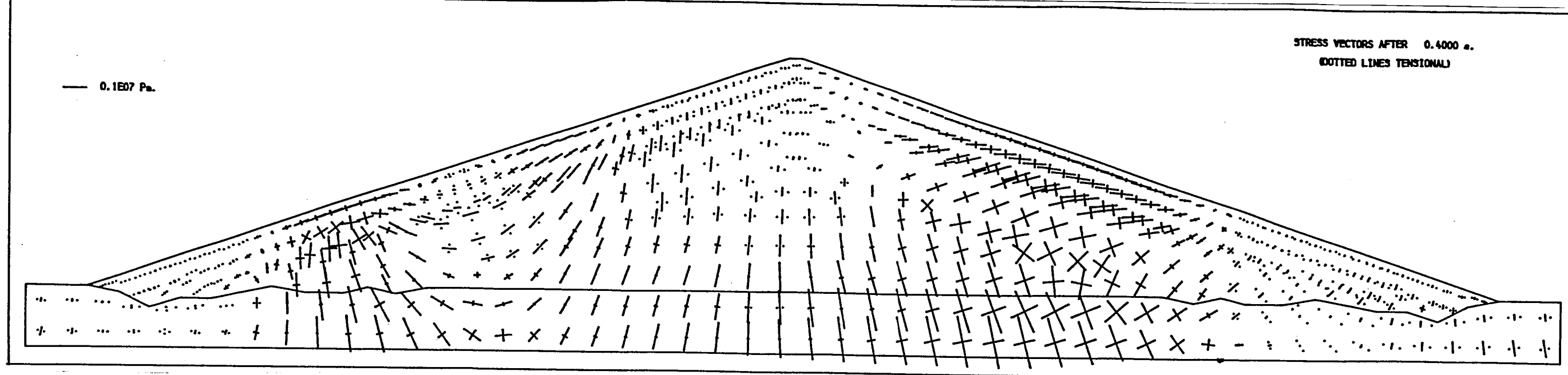
Angle of incidence 20°

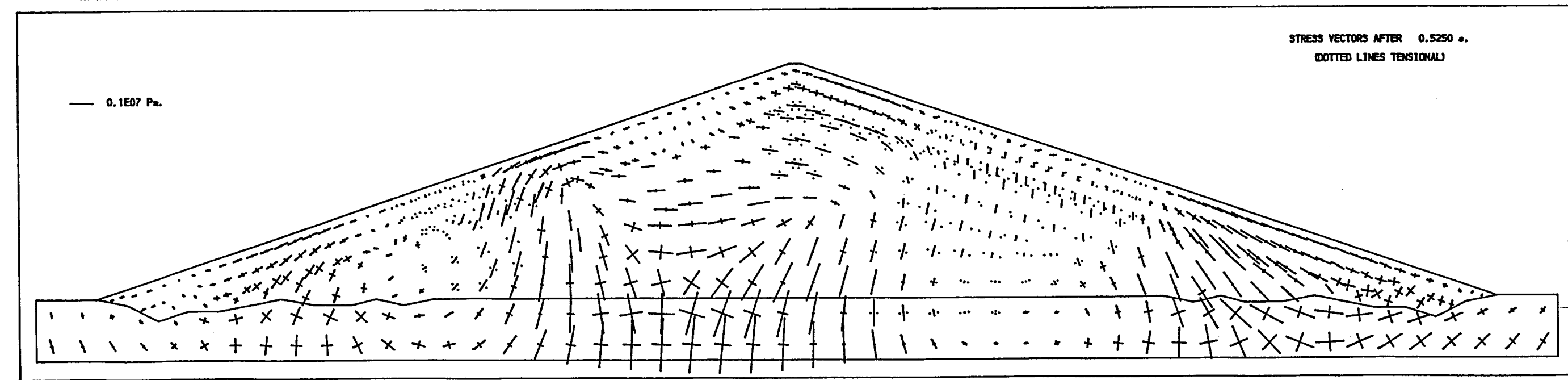
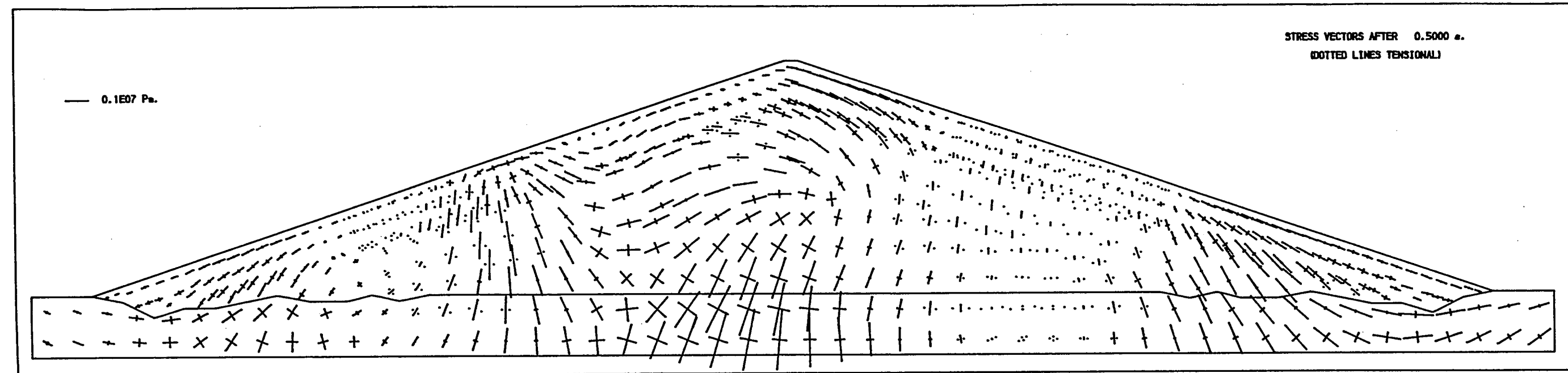
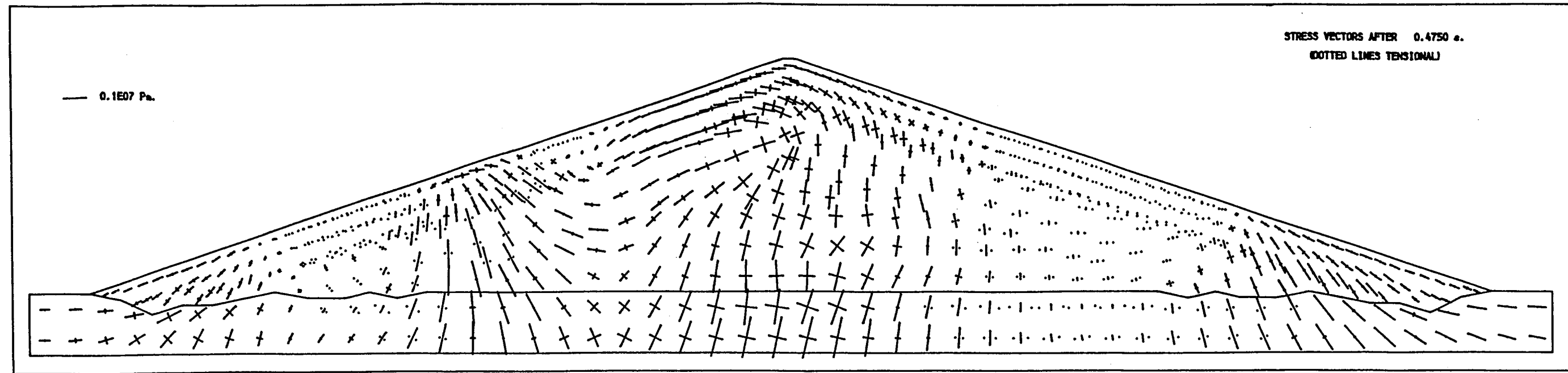
Base acceleration g

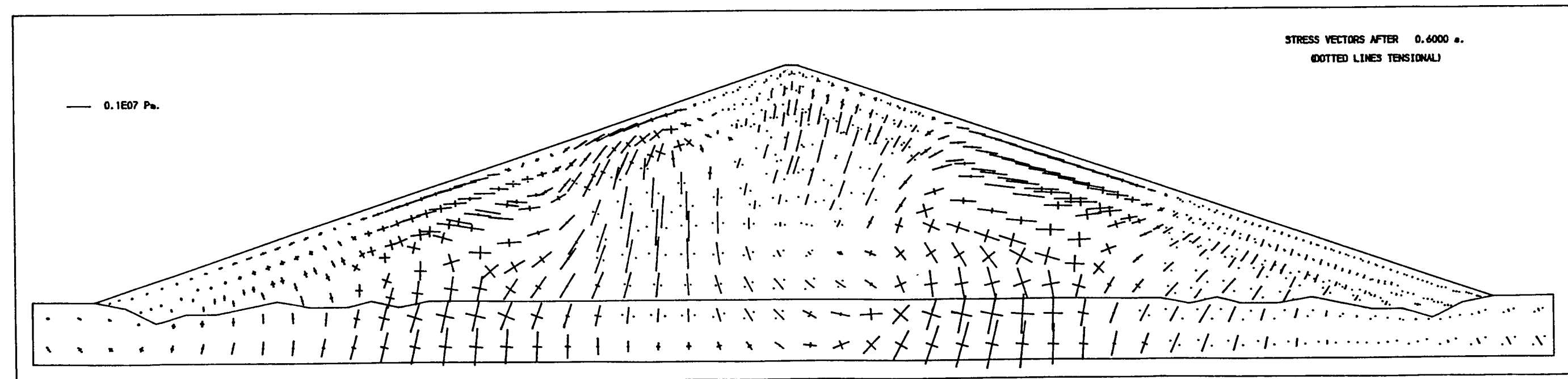
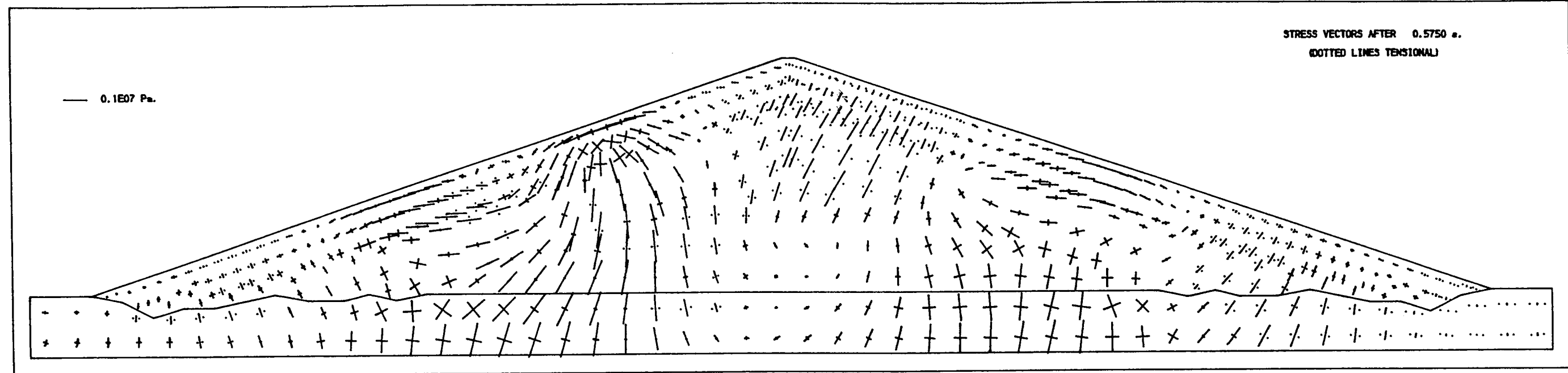
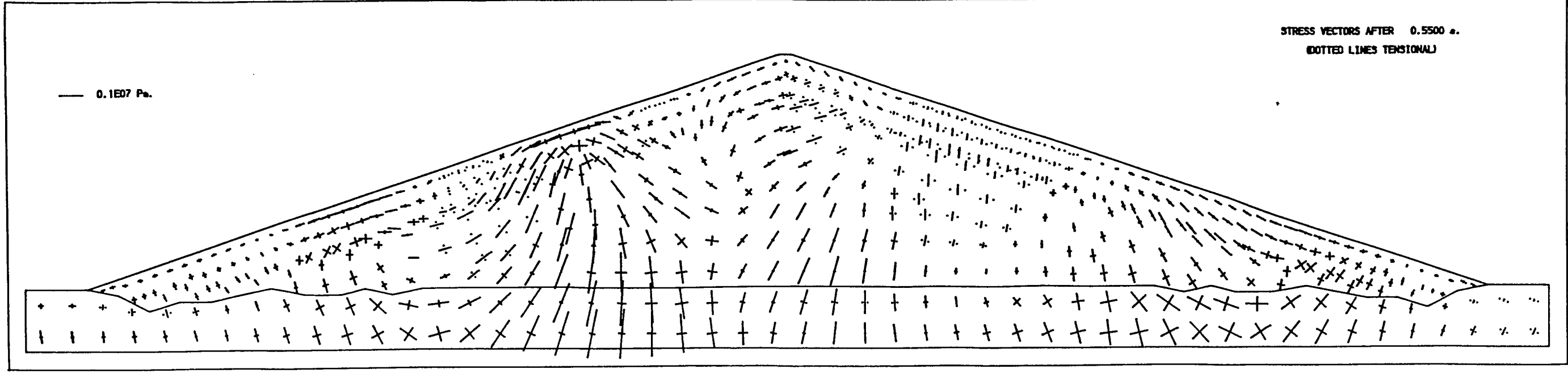










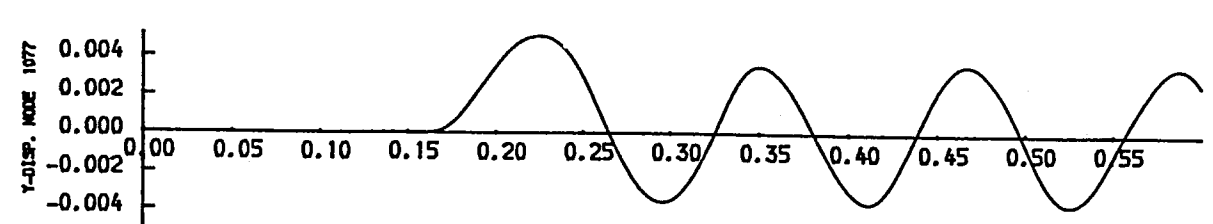
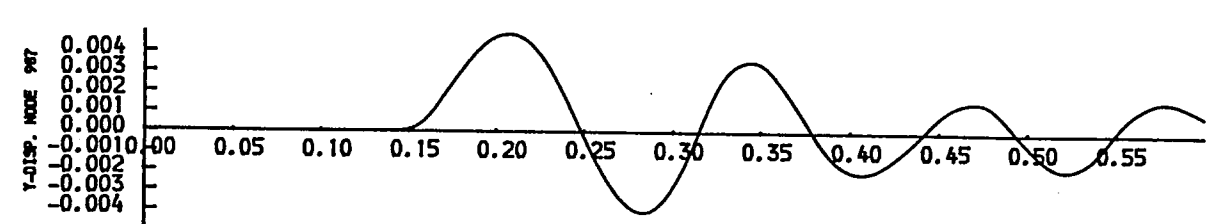
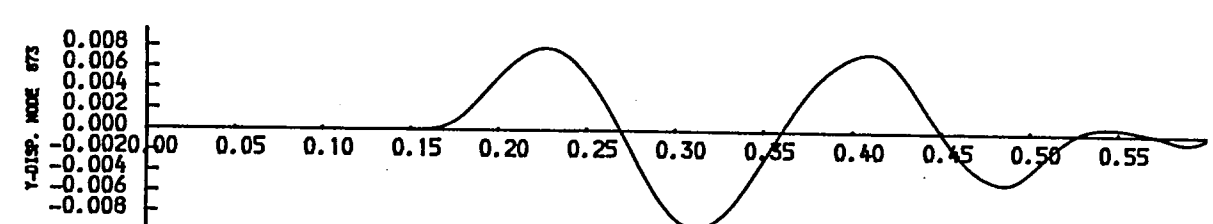
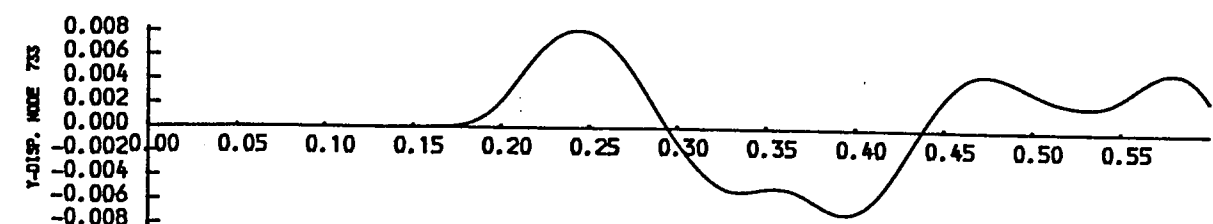
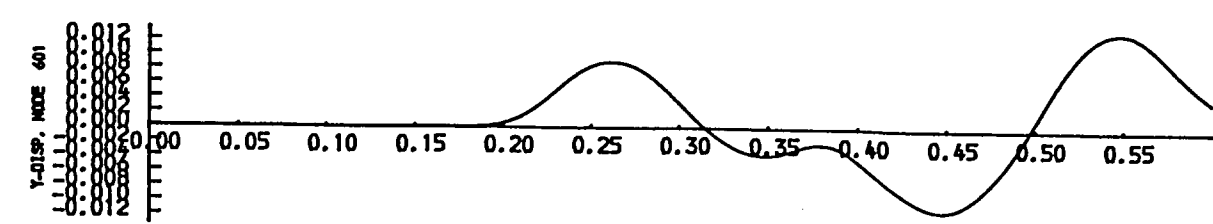
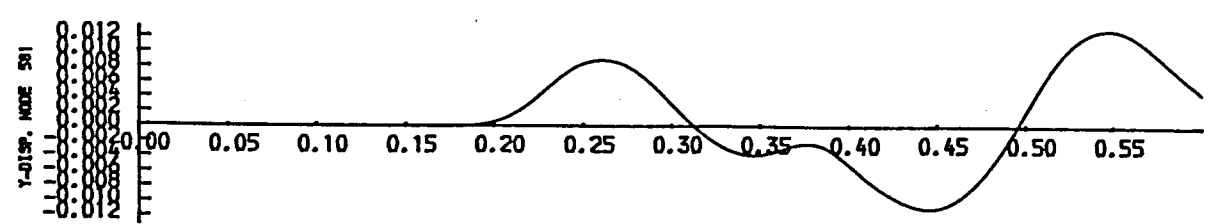
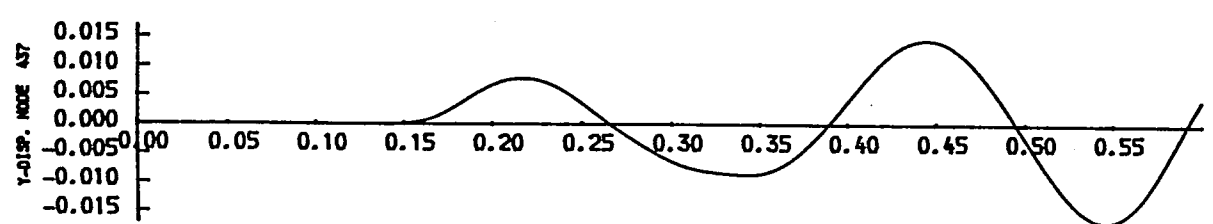
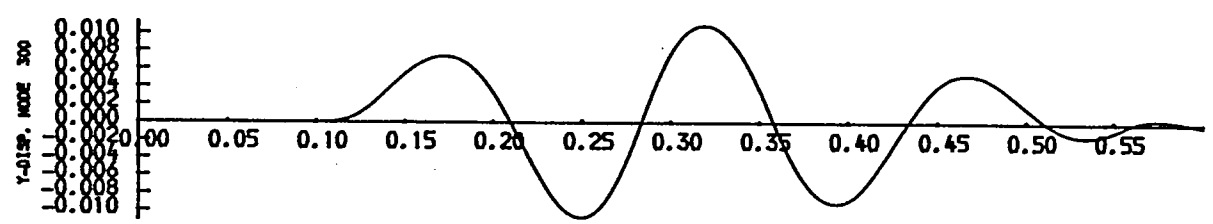
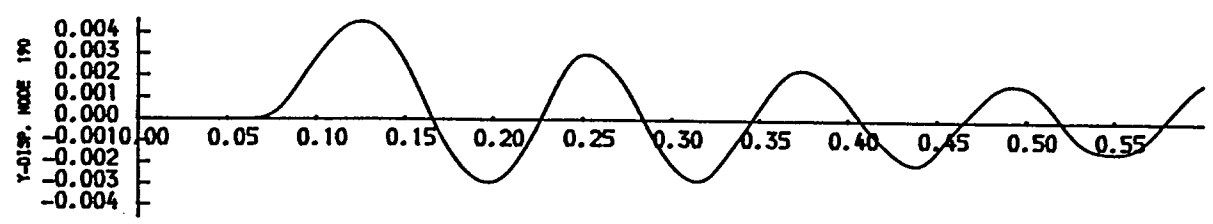
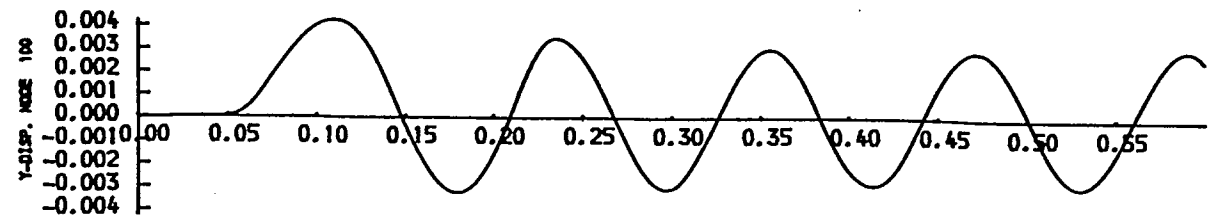


Time-displacement graphs and stress distributions for D2/10

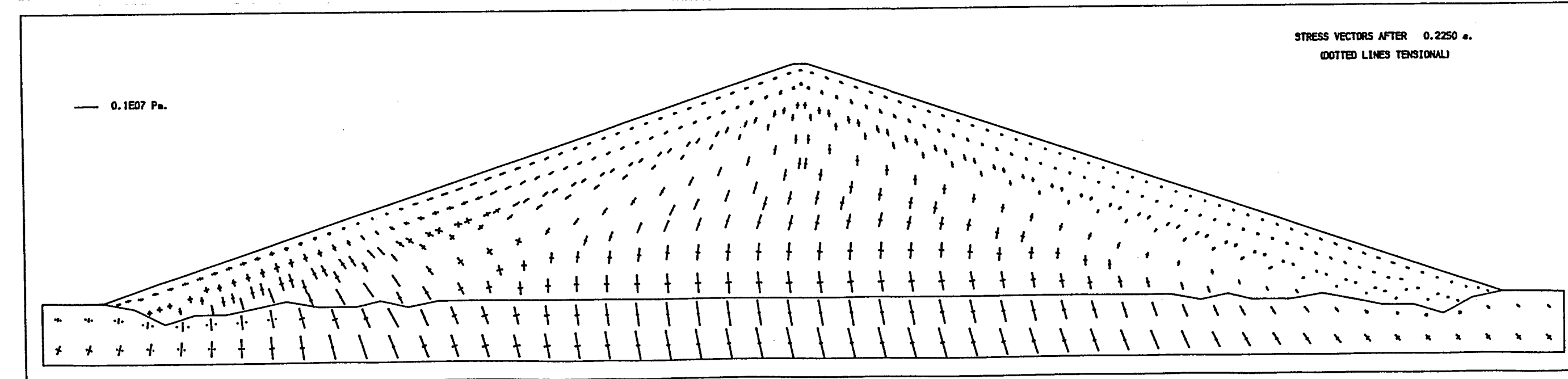
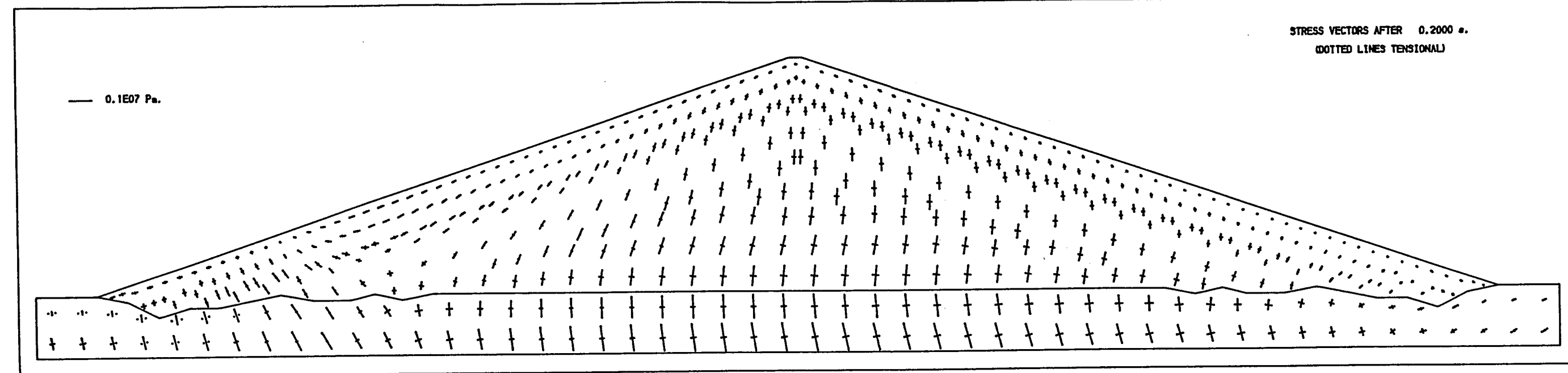
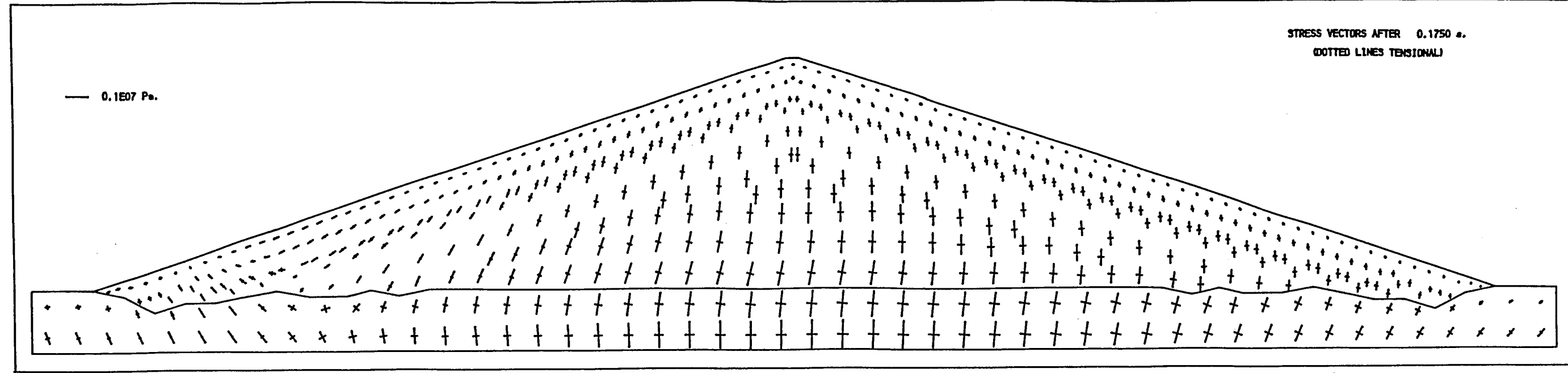
S-wave

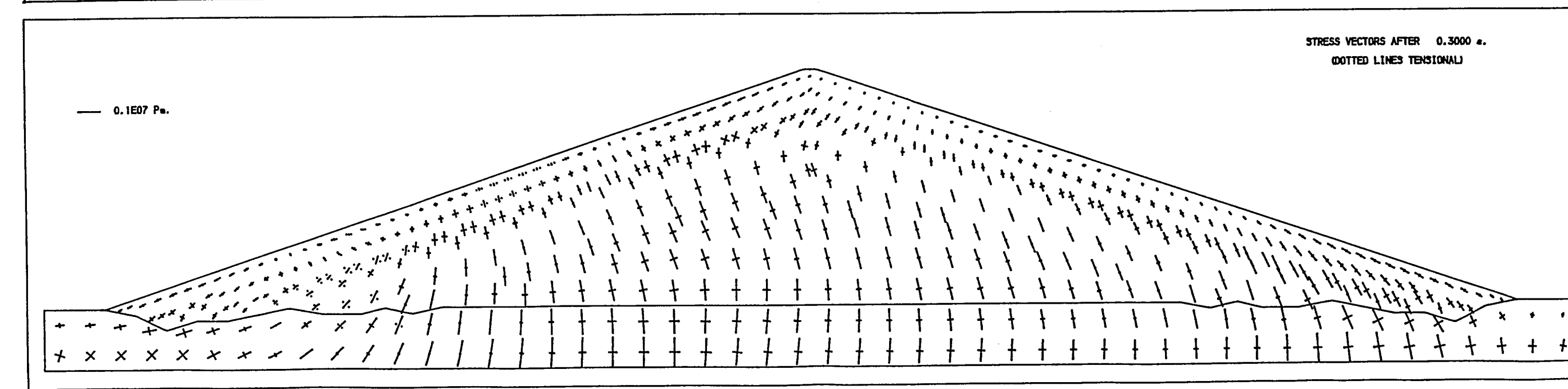
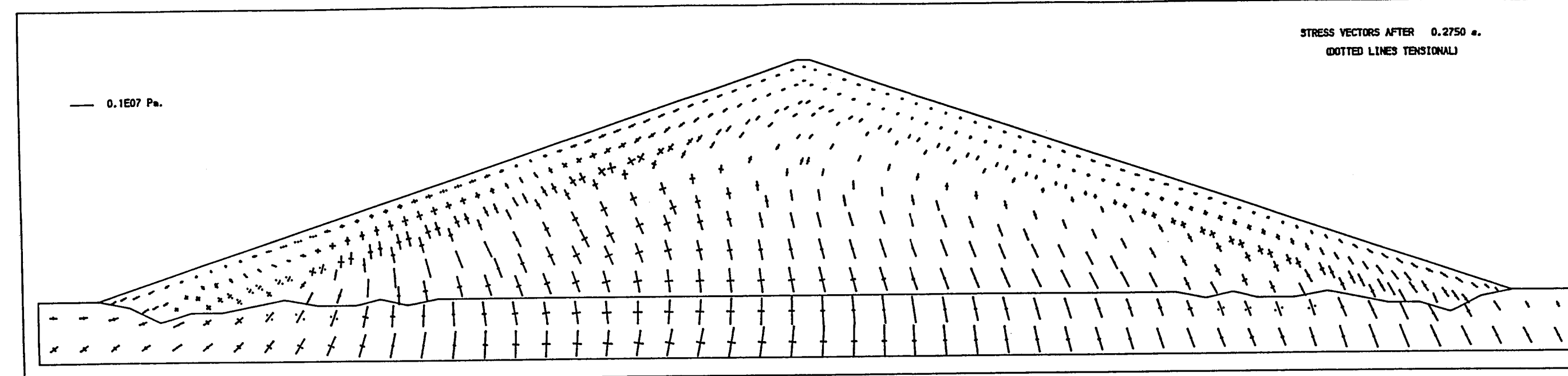
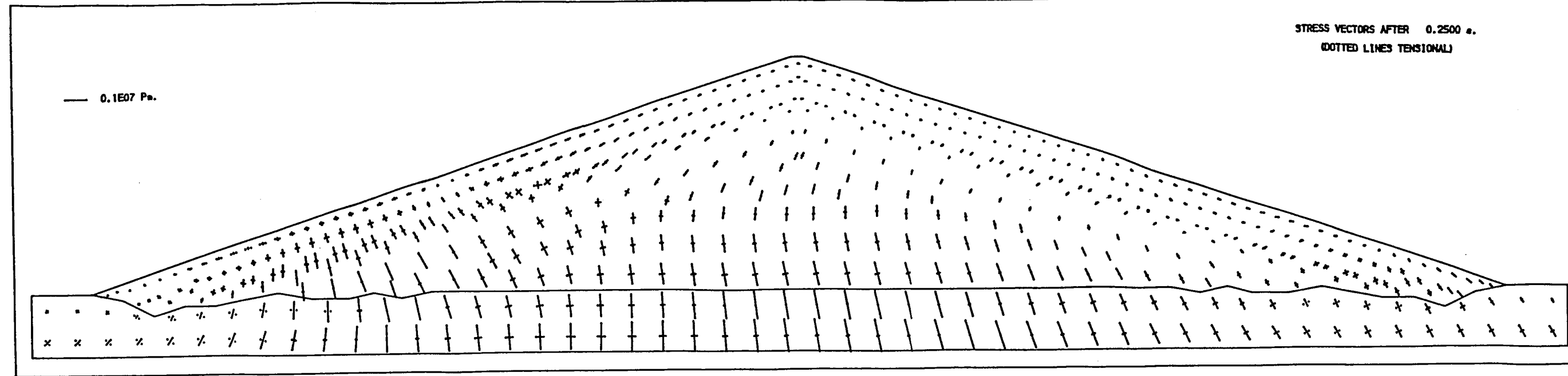
Angle of incidence 20°

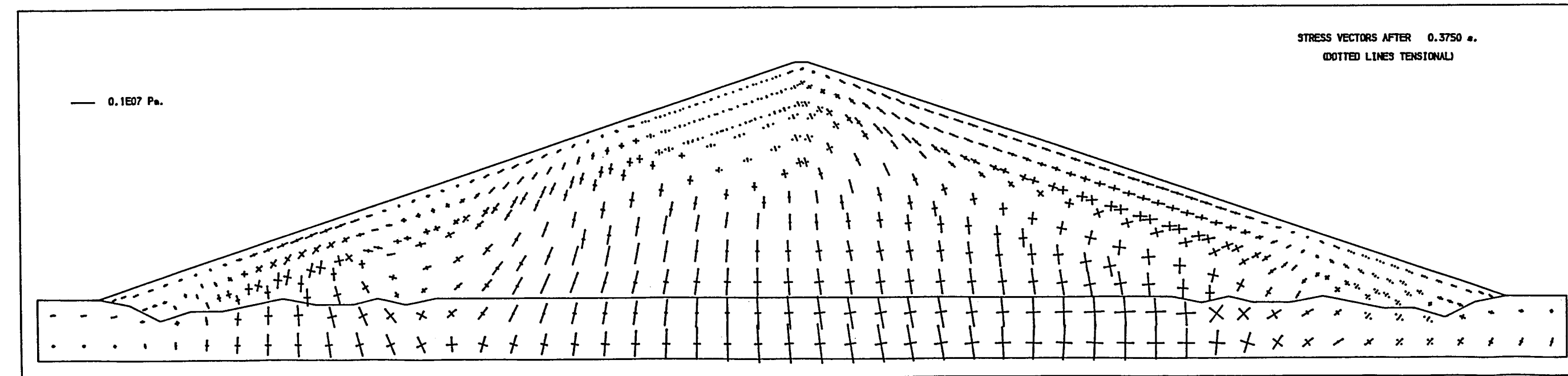
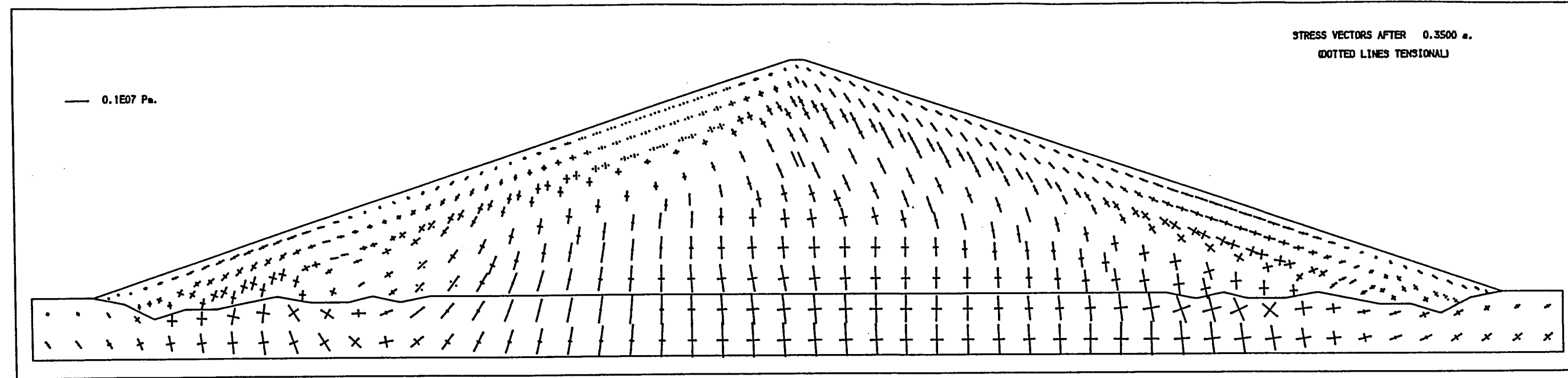
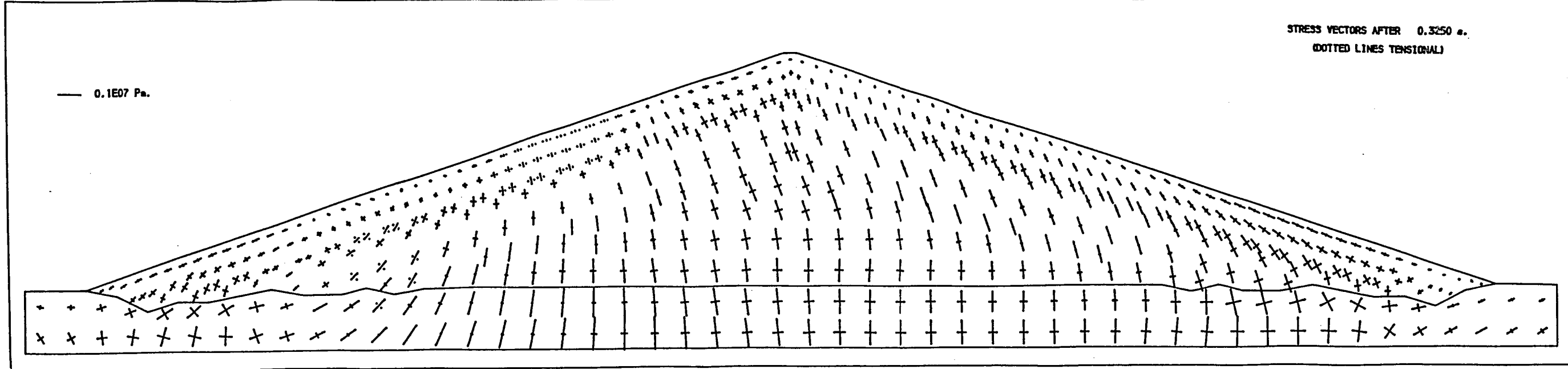
Base acceleration $\frac{1}{2}g$

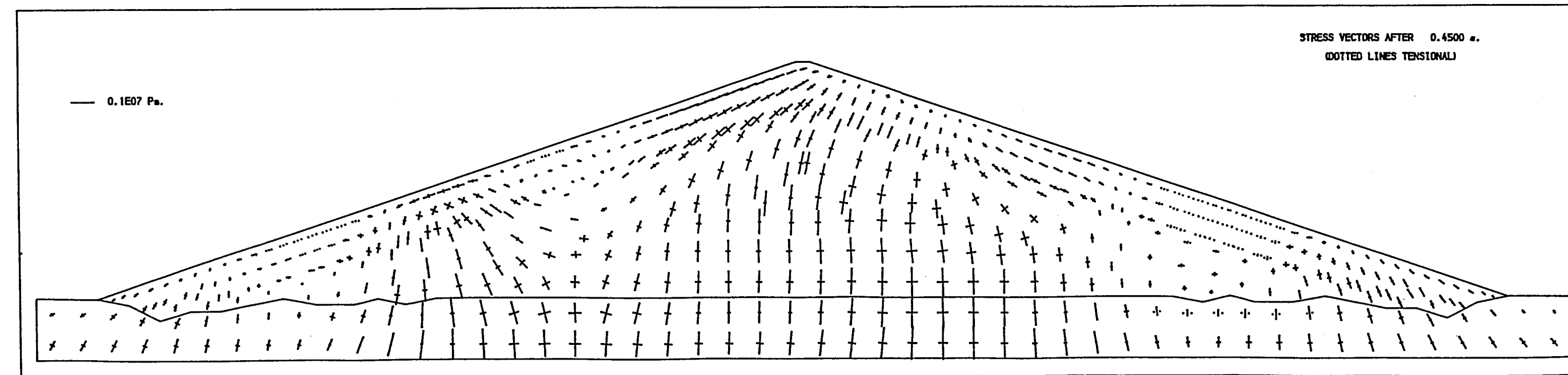
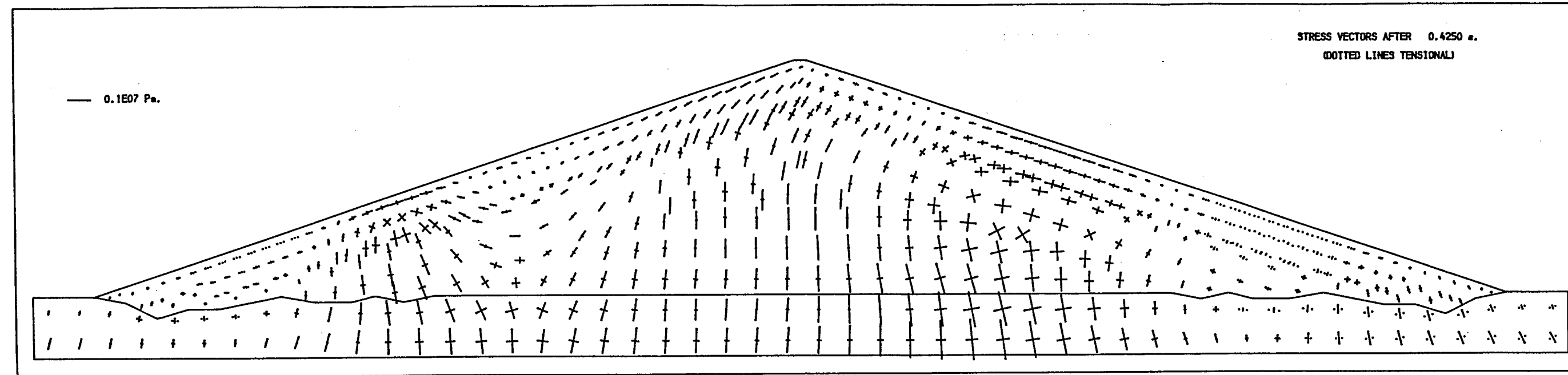
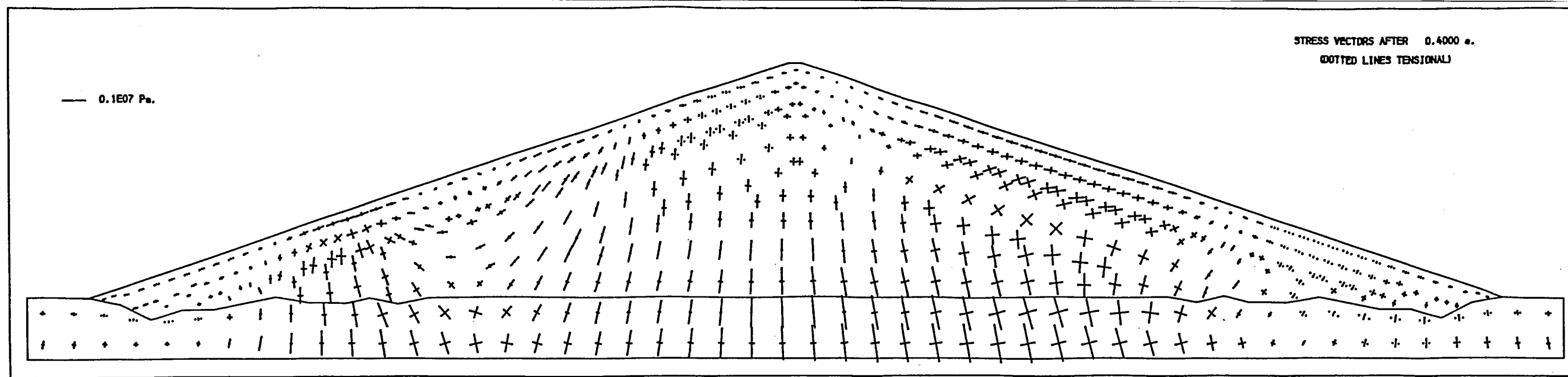


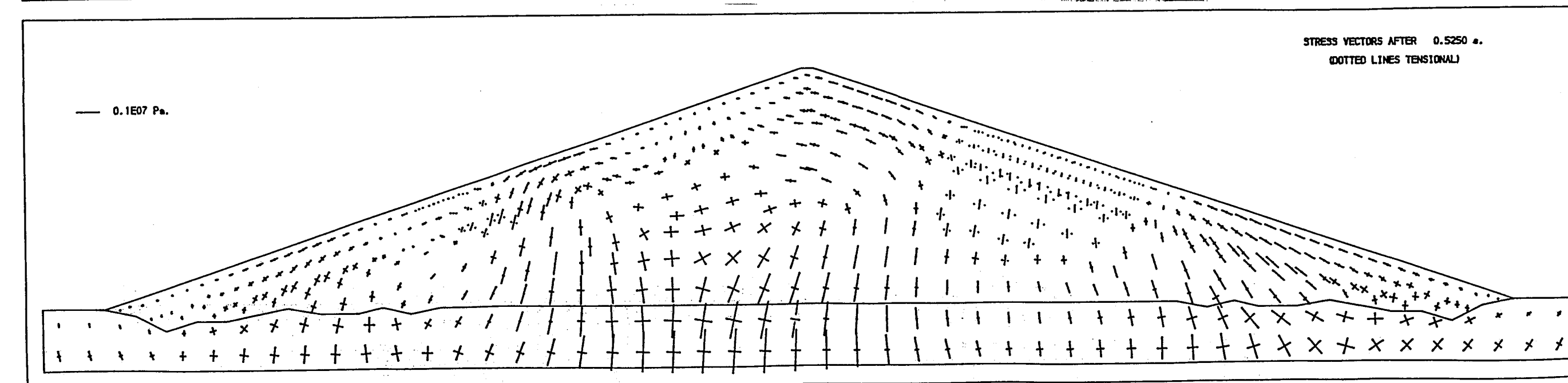
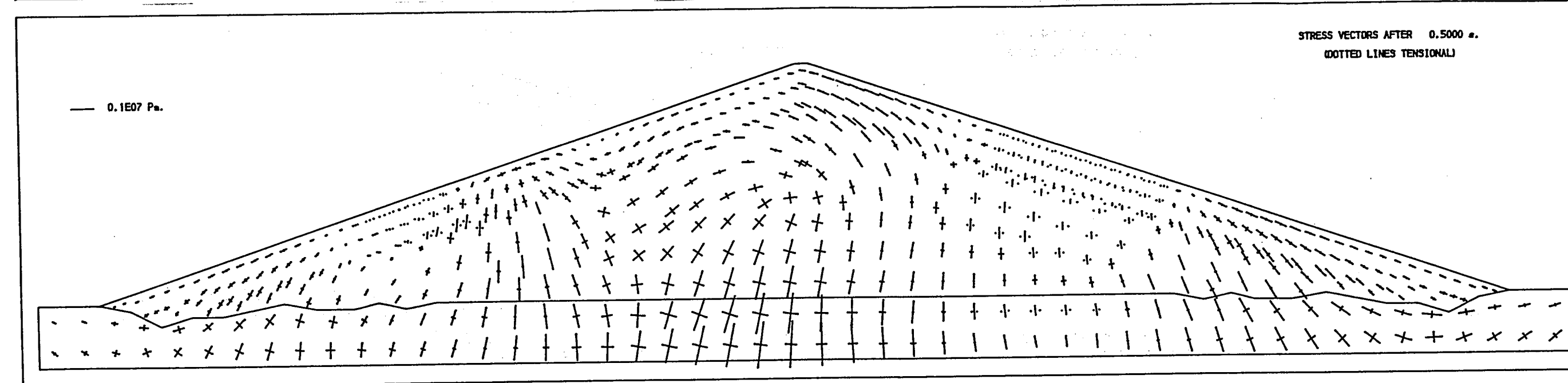
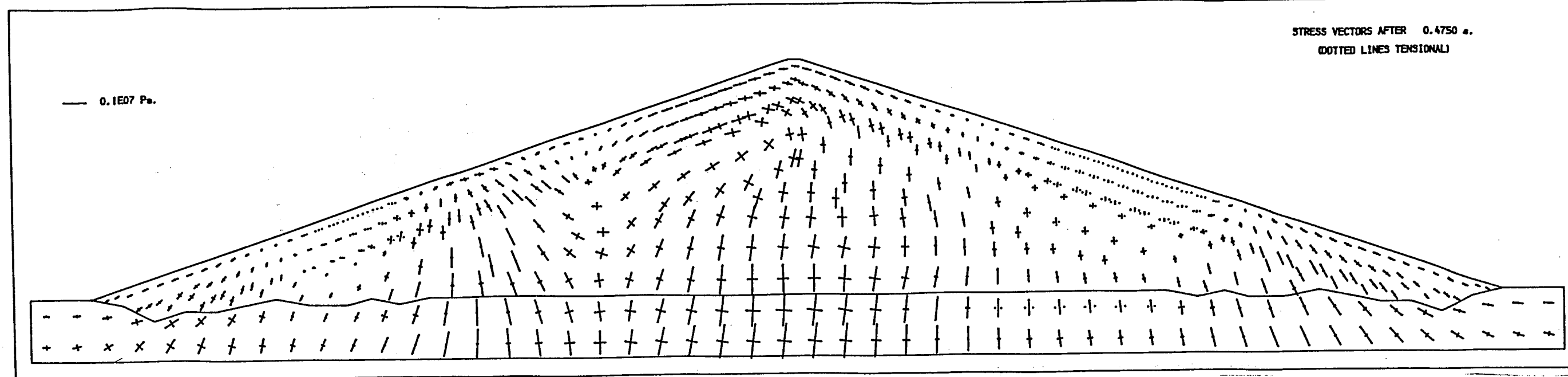
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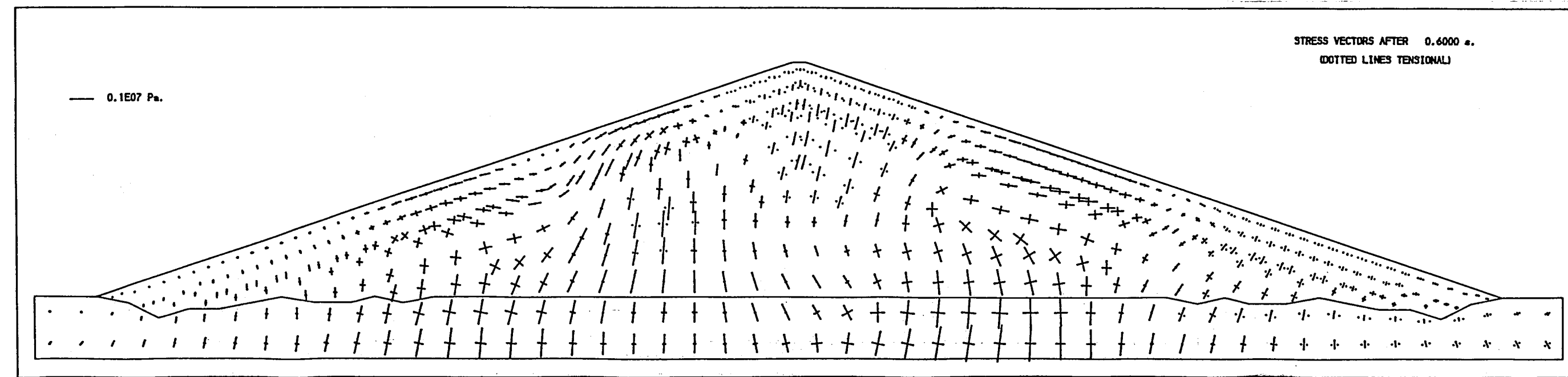
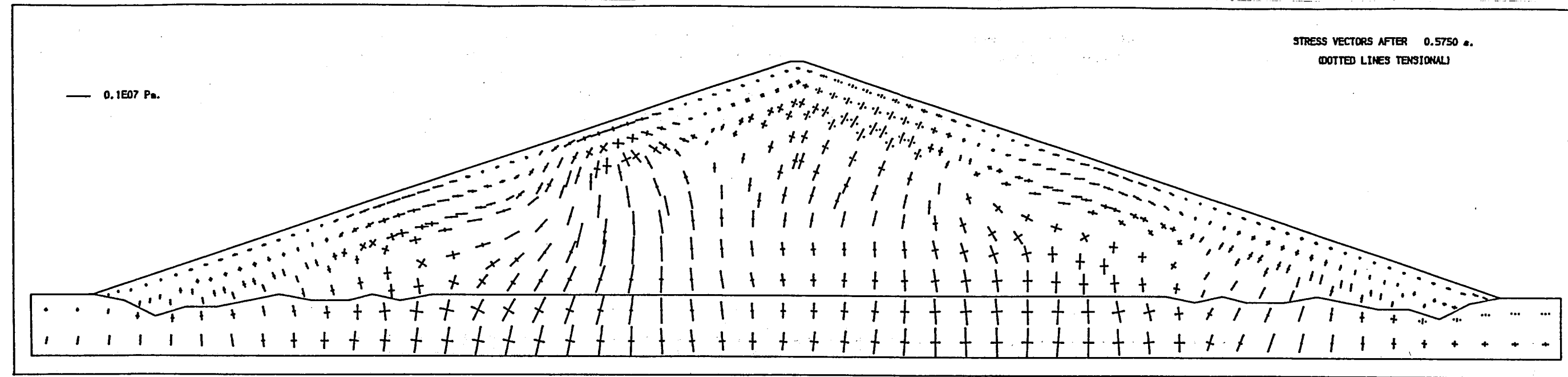
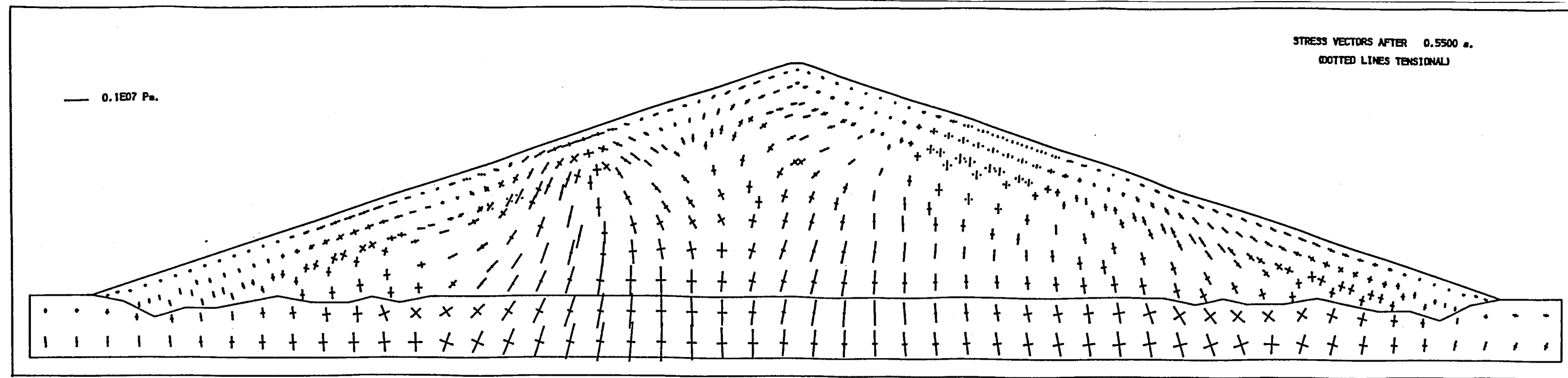












Time-displacement graphs and stress distributions for D2 /11

S-wave of incidence 30°

Base acceleration g

