

# SUMMARY REPORT 33-11(S)

## PILING ANALYSIS WAVE EQUATION COMPUTER PROGRAM UTILIZATION MANUAL

### SUMMARY REPORT of Research Report Number 33-11 Project 2-5-62-33

PILE DRIVING ANALYSIS TEXAS A&M UNIVERSITY										OPTIONS	BY: A. Agg/c	DATE: 8/2/67	PAGE # 1 OF 2
CASE NO.	NO. OF PROB.	1/DELTA	2/SLACK (1)	3/SLACK (2)	4/SLACK (3)	5/SLACK (4)	6/SLACK (5)	7/SLACK (6)	8/SLACK (7)	9/SLACK (8)	10/SLACK (9)	11/SLACK (10)	12/SLACK (11)
422	10	0.2	1/1000	1/000	1/000	1/10	1/0						
LBS.													
		W (1)	W (2)	W (3)	W (4)	W (5)	W (6)	W (7)	W (8)	W (9)	W (10)	W (11)	W (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		W (1)	W (2)	W (3)	W (4)	W (5)	W (6)	W (7)	W (8)	W (9)	W (10)	W (11)	W (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		W (1)	W (2)	W (3)	W (4)	W (5)	W (6)	W (7)	W (8)	W (9)	W (10)	W (11)	W (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		W (1)	W (2)	W (3)	W (4)	W (5)	W (6)	W (7)	W (8)	W (9)	W (10)	W (11)	W (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
LBS./IN.													
		K (1)	K (2)	K (3)	K (4)	K (5)	K (6)	K (7)	K (8)	K (9)	K (10)	K (11)	K (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		K (1)	K (2)	K (3)	K (4)	K (5)	K (6)	K (7)	K (8)	K (9)	K (10)	K (11)	K (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		K (1)	K (2)	K (3)	K (4)	K (5)	K (6)	K (7)	K (8)	K (9)	K (10)	K (11)	K (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
SO. IN.													
		AREA (1)	AREA (2)	AREA (3)	AREA (4)	AREA (5)	AREA (6)	AREA (7)	AREA (8)	AREA (9)	AREA (10)	AREA (11)	AREA (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		AREA (1)	AREA (2)	AREA (3)	AREA (4)	AREA (5)	AREA (6)	AREA (7)	AREA (8)	AREA (9)	AREA (10)	AREA (11)	AREA (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		AREA (1)	AREA (2)	AREA (3)	AREA (4)	AREA (5)	AREA (6)	AREA (7)	AREA (8)	AREA (9)	AREA (10)	AREA (11)	AREA (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
%													
		RU (1) %	RU (2) %	RU (3) %	RU (4) %	RU (5) %	RU (6) %	RU (7) %	RU (8) %	RU (9) %	RU (10) %	RU (11) %	RU (12) %
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		RU (1) %	RU (2) %	RU (3) %	RU (4) %	RU (5) %	RU (6) %	RU (7) %	RU (8) %	RU (9) %	RU (10) %	RU (11) %	RU (12) %
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		RU (1) %	RU (2) %	RU (3) %	RU (4) %	RU (5) %	RU (6) %	RU (7) %	RU (8) %	RU (9) %	RU (10) %	RU (11) %	RU (12) %
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
INCHES													
		SLACK (1)	SLACK (2)	SLACK (3)	SLACK (4)	SLACK (5)	SLACK (6)	SLACK (7)	SLACK (8)	SLACK (9)	SLACK (10)	SLACK (11)	SLACK (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		SLACK (1)	SLACK (2)	SLACK (3)	SLACK (4)	SLACK (5)	SLACK (6)	SLACK (7)	SLACK (8)	SLACK (9)	SLACK (10)	SLACK (11)	SLACK (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		SLACK (1)	SLACK (2)	SLACK (3)	SLACK (4)	SLACK (5)	SLACK (6)	SLACK (7)	SLACK (8)	SLACK (9)	SLACK (10)	SLACK (11)	SLACK (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100
		SLACK (1)	SLACK (2)	SLACK (3)	SLACK (4)	SLACK (5)	SLACK (6)	SLACK (7)	SLACK (8)	SLACK (9)	SLACK (10)	SLACK (11)	SLACK (12)
		1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100	1/100

NOTES: ONE OR MORE PROBLEMS MUST BE LISTED ON PAGE 2  
W'S AND AREAS 1 TO P INCL.; K'S AND SLACK'S 1 TO P-1 INCL.; RU'S 1 TO P-1 INCL. (P-1 IS % RU UNDER POINT OF FILE.)

Cooperative Research Program of the  
Texas Transportation Institute and the Texas Highway Department  
In Cooperation with the  
U. S. Department of Transportation, Federal Highway Administration,  
Bureau of Public Roads

March 1969

TEXAS TRANSPORTATION INSTITUTE

Texas A&M University  
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# **Piling Analysis Wave Equation Computer Program Utilization Manual**

by

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This manual describes the utilization of the computer program for the application of the one-dimensional wave equation to the investigation of a pile during driving. The program is based upon a procedure developed by E. A. L. Smith.<sup>1</sup>

The program can be used to obtain the following information for one blow of the pile driver's ram for any specified soil resistance:

1. Stresses in the pile.
2. Displacement of the pile (penetration).
3. Estimating static load capacity of the pile from pile driver blow count. This capacity is the static resistance at the time of driving and does not reflect soil set-up.

The program is valuable in that system parameters heretofore ignored (in pile driving formulas) can be included and their effects investigated. It makes possible an engineering evaluation of driving equipment and pile type, rather than relying only upon experience and judgment.

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<sup>1</sup>Smith, E. A. L., "Pile Driving Analysis by the Wave Equation," Journal of the Soil Mechanics and Foundations Division, **Proceedings of the American Society of Civil Engineers**, Proceedings Paper 2574, SM 4, August, 1960, pp. 35-61.