BEHAVIOR OF AXIALLY LOADED DRILLED SHAFTS IN BEAUMONT CLAY

PART FIVE - APPENDICES

by

Michael W. O'Neill
Lymon C. Reese

Research Report Number 89-8

Soil Properties as Related to Load Transfer
Characteristics of Drilled Shafts

Research Project 3-5-65-89

conducted for

The Texas Highway Department

in cooperation with the
U. S. Department of Transportation
Federal Highway Administration

by the

CENTER FOR HIGHWAY RESEARCH
THE UNIVERSITY OF TEXAS AT AUSTIN

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The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Federal Highway Administration.

PREFACE

This report is the eighth in a series of reports from Research Project 3-5-65-89 of the Cooperative Highway Research Program. The principal aim of the report is to describe the results of axial load tests of full-scale, instrumented drilled shafts in the Beaumont Clay formation in Houston, Texas. The tests were conducted to measure side and base stresses in cylindrical and underreamed shafts, constructed by both wet and dry procedures. The distribution of shear stresses along the sides of the shafts was measured to provide an insight into the mechanism affecting the load transfer behavior of drilled shafts in clay. Maximum side shear stresses and base capacities have been correlated with the undrained shear strength of the soil as indicated by laboratory procedures and with results of Texas Highway Department cone penetration tests.

The report is issued in five separately bound parts:

Part One - "State of the Art" describes the historical development of drilled shafts, describes construction procedures, presents the mechanics of shaft behavior, outlines current methods of design, and presents a summary of the results of field tests reported in the technical literature.

Part Two - "Site Investigation and Test Shaft Instrumentation" gives details of the geotechnical investigation of the test site, describes the test shafts and anchorage systems, describes the various instrumentation

systems, and presents results of monitoring the instrumentation under no-load conditions.

Part Three - "Field Tests" describes the field test procedures and presents the detailed results of the tests.

Part Four - "Design Influences and Conclusions" presents criteria, obtained through the field tests and from the literature review, for designing drilled shafts in Beaumont Clay.

Part Five - "Appendices" gives supporting data and details not contained in the main body of Parts One through Four.

It is not intended that the reader read the entire report in order to obtain information on any particular subject. The report was separated into the various Parts, any of which can be consulted for specific details, for this reason. It is expected that most readers will desire to consult only Part Four, which briefly summarizes Parts One through Three, and then consicely presents design criteria for axially loaded drilled shafts in Beaumont Clay. The Chapters are numbered continuously from Part One through Part Five. Although some cross-referencing exists, the various Parts are written to be as independent as possible. The reference list is contained in Part Four.

This report is the manifestation of the efforts of many individuals. The technical contributions of Dr. Walter R. Barker, Mr. Harold H. Dalrymple, Mr. James N. Anagnos, Mr. Frederick E. Koch, and Mr. Olen L. Hudson merit special recognition. Mr. James Holmes skillfully made the drawings. Miss Mary Kern proficiently prepared the final copy. Thanks

are also due to Miss Pamela Terwelp, Miss Cheryl Johnson, and Mrs. Eddie B. Hudepohl for their assistance in preparing the report. The authors also acknowledge the valuable assistance and advice given by Mr. Horace Hoy, Mr. H. D. Butler, and Mr. Gaston Berthelot, all of the Texas Highway Department, and by the maintenance personnel of District 12.

Michael W. O'Neill

Lymon C. Reese

December 1970

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LIST OF REPORTS

Report No. 89-1, "Field Testing of Drilled Shafts to Develop Design Methods," by Lymon C. Reese and W. Ronald Hudson, describes the overall approach to the design of drilled shafts based on a series of field and laboratory investigations.

Report No. 89-2, "Measurements of Lateral Earth Pressure in Drilled Shafts," by Lymon C. Reese, J. Crozier Brown, and H. H. Dalrymple, describes the development and evaluation of pressure gages to measure lateral-earth pressures on the drilled shaft.

Report No. 89-3, "Studies of Shearing Resistance Between Cement Mortar and Soil," by John W. Chuang and Lymon C. Reese, describes the overall approach to the design of drilled shafts based on field and laboratory investigations.

Report No. 89-4, "The Nuclear Method of Soil-Moisture Determination at Depth," by Clarence J. Ehlers, Lymon C. Reese, and James N. Anagnos, describes the use of nuclear equipment for measuring the variations of moisture content at the drilled shaft test sites.

Report No. 89-5, "Load Distribution for a Drilled Shaft in Clay Shale," by Vasant N. Vijayvergiya, W. Ronald Hudson, and Lymon C. Reese, describes the development of instrumentation capable of measuring axial load distribution along a drilled shaft, the development, with the aid of full-scale load testing, of a technique of analysis of observed data, and the correlation of observed data with the Texas Highway Department cone penetration test.

Report No. 89-6, "Instrumentation for Measurement of Axial Load In Drilled Shafts," by Walter R. Barker and Lymon C. Reese, describes the development and performance of various instrumentation systems used to measure the axial load distribution in field tests of full-scale drilled shafts.

Report No. 89-7, "The Determination of Soil Properties In Situ," by David B. Campbell and W. Ronald Hudson, describes the use of the Menard Pressuremeter, the Texas Highway Department cone penetrometer, and The University of Texas in situ device in estimating soil properties in situ and estimating load transfer values obtained from drilled shaft tests.

Report No. 89-8, "Behavior of Axially Loaded Drilled Shafts in Beaumont Clay," by Michael W. O'Neill and Lymon C. Reese, describes the results of axial load tests of instrumented drilled shafts having varying geometry and differing methods of installation and presents a tentative design procedure for drilled shafts in Beaumont Clay.

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ABSTRACT

A drilled shaft is a foundation element formed by boring a cylindrical hole into the soil and backfilling the hole with concrete. The recent increase in the utilization of drilled shafts as foundations for major structures has created a need for systematic investigations of their behavior. One such investigation, in which four full-sized drilled shafts of varying geometries were loaded axially to failure, was conducted at a site in the stiff, fissured Beaumont Clay in Houston, Texas. The test shafts were constructed by both wet and dry procedures. They were fully instrumented for measurement of the distribution of axial load, thereby permitting a calculation of the distribution of developed side resistance and of base resistance.

Prior to and during the field tests, a careful site investigation was conducted, and a shear strength profile was developed based on unconsolidated, undrained triaxial test results and Texas Highway Department cone penetrometer soundings. The maximum side shear stresses developed during the load tests were compared to the shear strength profile and penetrometer results in order to arrive at shear strength reduction factors that could be relied upon in predicting design values for side friction.

The side shear stresses were observed to vary considerably from the tops of the shafts to the bottoms, generally being quite small at both ends. Overall, the shafts that were installed in dry boreholes developed an average maximum side shear stress of about one-half of the shear

strength of the clay. The single shaft installed in a processed borehole developed an average of only about one-third of the shear strength of the clay along its sides.

The load measurements indicated that bearing capacity equations used for ultimate base resistance for piles in clay were valid for both belled and cylindrical test shafts.

After the tests were completed, soil adjacent to the walls of three of the shafts was sampled in an attempt to determine the nature of the mechanism of shear strength reduction in soil immediately adjacent to the sides of drilled shafts. In the shafts installed in dry boreholes, some soil softening due to an increase in moisture content occurred, particularly near the bases. This softening, produced by water from the setting concrete, accounted for some, but not all of the measured strength reduction. Other reasons for shear strength reduction are reasoned to be the effects of remolding and opening of fissures as the boreholes were drilled and mechanical base-side interference. Samples taken adjacent to the shaft installed in a processed hole revealed pockets of trapped drilling mud between the sides of the borehole and the wall of the shaft.

Based upon the field study and a comprehensive review of related research conducted in similar soil formations, a tentative design procedure is suggested. That procedure includes criteria for providing an adequate factor of safety against plunging failure and for limiting immediate settlement at working load to an acceptable value.

KEY WORDS: piles, bored piles, drilled shafts, soil mechanics, undrained shear tests, cohesive soils, cone penetrometer, instrumentation, field tests, design criteria

SUMMARY

The purpose of this report is to describe the results of field tests of full-sized, instrumented drilled shafts in the Beaumont Clay formation. Drilled shafts with varying base geometry, length, and method of installation were load tested to obtain measurements of the distribution of axial load with depth and of base load-settlement characteristics in order to develop design criteria.

Pertinent soil parameters were obtained by various standard procedures, including the unconsolidated, undrained triaxial test and the T.H.D. cone penetrometer test to provide a basis for the correlation of test results.

The test shafts were observed to develop considerable resistance in side friction. Furthermore, side resistance was observed to develop much sooner than base resistance, with the result that side resistance predominated over base resistance at design load. The shafts installed in dry boreholes mobilized an average of one-half of the shear strength of the soil in side friction, while the side frictional stresses in the shaft installed in a processed borehole were significantly smaller. An investigation showed that the shafts installed in the dry were well-formed and bonded securely to the soil composing the borehole walls, while the shaft installed in a processed hole contained pockets of drilling mud between the concrete and natural soil. Based upon these observations, the numerical test results, and field tests of other investigators in similar soil formations, a tentative design procedure incorporating side resistance is formulated.

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IMPLEMENTATION STATEMENT

The study indicated that considerable load was resisted in side friction in axially loaded drilled shafts in stiff clay with both straight sides and underreams, installed in dry boreholes and in boreholes processe with drilling mud. The possibility that considerably smaller frictional resistance occurs in shafts installed in processed holes was observed, however. The test results generally agree with those of other investigators in similar soils.

Measured side shear and base capacities were correlated with standard soil strength tests. It appears that side friction can be reliably estimated for shafts in dry boreholes, and to some extent for shafts installed in processed holes, from laboratory soil tests or from penetrometer soundings. Therefore, a new design procedure for drilled shafts is suggested that incorporates side friction, a resistance component heretofore omitted from consideration. The incorporation of side friction in the design of drilled shafts will undoubtedly result in considerable monetary savings in bridge foundation construction.

The suggested general design parameters are, of necessity, somewhat conservative, because of the limited number of tests that were conducted and because field testing was limited to short-term loading in one specific soil formation. Further savings can be realized by extending the research into long-term testing, into testing in other soil formations, and into reevaluating construction techniques for installation of shafts in processed boreholes. Such research would provide a better definition of the design parameters in all situations and would therefore permit the design of drilled shafts to be more rational and less conservative.

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NOMENCLATURE

Symbol	Definition
A_B	area of base
A_c	transformed cross-sectional area of stem (including effects of reinforcing steel)
A_S	peripheral area of stem
A'_S	nominal peripheral area of the stem excluding sections at the top and bottom, each equal in height to twice the stem diameter
B	diameter of loaded area
$\bar{B}$	width of group of piles or shafts
C'	change in void ratio for increment of applied load
C_c	compression index
C_e	expansion index
c'	effective cohesion
c_{base}	average undrained cohesion of clay beneath base of shaft
c_{mean}	average undrained soil cohesion for fissured soil
c_{sides}	average undrained cohesion of clay along sides of shaft
c_u	undrained cohesion
c_v	coefficient of consolidation
D_r	relative density
d	diameter of shaft or pile
d_{stem}	diameter of stem
E_c	Young's modulus of concrete

Symbol	Definition
E_o	slope of initial tangent to nonlinear soil stress-strain curve; circuit output
$\frac{E_o}{c_u}$	ratio of E_o to half of maximum indicated undrained stress difference of clay
$e_{corrected}$	void ratio at beginning of loading increment of consolidation test corrected for elastic compression of consolidation apparatus
e_i	indicated void ratio at beginning of loading increment in consolidation test
e_o	void ratio of soil under overburden pressure, p_o
e'_o	void ratio after load increased to preconsolidation pressure, then decreased to overburden pressure in consolidation test
e_{50}	void ratio corresponding to t_{50}
e_{100}	void ratio corresponding to t_{100}
F.S.	factor of safety at working load
f_1, f_2	base shape factors
H	thickness of compressible layer
h	depth of base of shaft
I_ρ	settlement influence coefficient
K	gage factor
K_o	coefficient of lateral earth pressure, or the ratio of horizontal effective stress to vertical effective stress
L	unit length along shaft
L_S	length of stem

Symbol	Definition
l	length of shaft or pile
N	number of blows per foot for T.H.D. penetrometer
N_c, N_q, N_γ	bearing capacity factors
N_q^*	bearing capacity factor for sands
NMC	natural moisture content
P_i	point at center of i^{th} layer at which consolidation settlement is computed
p	factor relating penetrometer results to maximum unit side resistance
Δp	increment of applied pressure causing consolidation
p'	factor relating penetrometer results to unit base capacity
p_c	preconsolidation pressure
p_i	i^{th} point on load transfer or load distribution curve
p_o	overburden pressure, or initial effective vertical pressure at the center of the compressible layer
$Q(z)$	function relating load in the shaft to depth
Q_B	total amount of load taken by the base
Q_S	total amount of load removed by the sides in shear
Q_T	applied load
$(Q_B)_{ult}$	ultimate base load
$(Q_S)_{ult}$	ultimate side load
$(Q_T)_{ult}$	ultimate load at top of pile or shaft
q	contact pressure
$(q_B)_{ult}$	unit ultimate bearing stress on the base

Symbol	Definition
$(q_S)_{ult}$	unit ultimate side resistance
$(q_B)_{ult, net}$	net unit ultimate bearing stress on the base
r	stem radius
S	mean shear strength of clay soil
S_r	degree of saturation
S_0	shear strength of soil before softening
S_1	shear strength of soil after softening
S1, S2, S3, S4	abbreviations for Test Shaft No. 1, Test Shaft No 2, Test Shaft No. 3, Test Shaft No. 4
S1T1, etc.	abbreviation for "Test No. 1 on Test Shaft No. 1," etc
s	shear stress, spacing between piles in a group
T_z	tensile force at depth z
t_{50}	time required to develop 50 per cent of primary consolidation (logarithm of time plot)
t_{100}	time required to develop 100 per cent of primary consolidation (logarithm of time plot)
v	applied voltage
w	downward movement, moisture content
w_T	downward displacement of the butt
$w_{\bar{z}}$	downward displacement at depth $\bar{z}$
z	depth coordinate
$\bar{z}$	generic depth
α	shear strength reduction factor
α_{avg}	average shear strength reduction factor over a specified length of shaft

Symbol	Definition
α_{min}	minimum shear strength reduction factor from a laboratory test series
α_{peak}	α_{avg} corresponding to peak side load
α_{ult}	α_{avg} corresponding to ultimate load
α_z	shear strength reduction factor at depth z
α_1	ratio of shear strength of soil around shaft after placing concrete to that existing before placing concrete
α_{11}	that part of α_1 due to softening because of migration of water from concrete into soil
α_{12}	that part of α_1 due to the shear strength reduction not accompanied by moisture migration (remolding, opening of surface fissures)
α_{13}	that part of α_1 due to surface effects and base-side mechanical interference
α_2	adhesion coefficient
$\bar{\alpha}$	average shear strength reduction factor over entire stem excluding top and bottom two diameters
β	settlement correlation coefficient, settlement interaction factor
γ'	effective unit of weight of soil
δ	angle of friction between the soil and concrete
δ_S	elastic compression of stem
ϵ	strain, general
$\epsilon_{circuit}$	circuit strain
ϵ_1	axial strain in triaxial or unconfined compression test
$\epsilon_{1_{steel}}$	strain in steel in longitudinal direction

Symbol	Definition
$\epsilon_{2_{steel}}$	strain in steel in transverse direction
ϵ_{50}	strain corresponding to one-half of the principal stress difference at failure
μv	abbreviation for microvolts
ν	Poisson's ratio
ξ	settlement ratio
ρ_B	average settlement beneath loaded area
ρ_c	total compression of compressible layer
σ	normal stress
σ_v'	vertical effective stress in the soil adjacent to the shaft
σ_Δ	principal stress difference in a triaxial or unconfined compression test
σ_1	maximum principal stress
σ_3	minimum principal stress
ϕ	angle of internal friction
ϕ' $(=\phi_d)$	effective angle of internal friction
ϕ_u	undrained angle of internal friction
ψ	additional shear strength reduction factor for shafts installed in a processed hole
ω	bearing capacity reduction factor for fissured clay

APPENDIX A

DRILLING REPORTS

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Texas Highway Department
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DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 1 of 2

County Harris
Highway No. SH225 and IH610
Control
Project No. 3-5-65-89

Structure Test Shafts
Hole No. H-1
Station 97+88 (South Loop East)
Loc. from Centerline Rt. 66' Lt.

District No.
Date 14 Nov, 1967
Grd. Elev. +35'
Grd. Water Elev.

Elev. (Ft.)	Depth (Ft.)	Sample	Log	THD PEN. TEST No. of Blows 1st 6"	THD PEN. TEST No. of Blows 2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	0											Lt. gray, yellow, and black clay with calcareous material - fill
												Tan and gray clay with some calcareous material
												"
	5					H-1-1			21	59	34	"
						H-1-2			31	59	32	"
						H-1-3			29	64	44	Tan and gray clay
						H-1-4			26	58	34	"
						H-1-5			32	66	41	"
	10					H-1-6			30	71	41	"
						H-1-7			--	60	--	Tan and gray clay with some calcareous material
						H-1-8			49	63	37	"
						H-1-9			38	62	39	"
						H-1-10			25	71	48	"
	15					H-1-11			22	62	33	Tan clay
						H-1-12						Gray clayey silt and sand 15½ - 16 '.
						H-1-13			23	43	30	Tan clay
						H-1-14			27			"
						H-1-15			14	63	42	"
	20					H-1-16			27			"
						H-1-17			24			"
						H-1-18			32	50	29	"
						H-1-19						"
						H-1-20			29	60	30	"
	25					H-1-21			32			"
						H-1-22			26			"
						H-1-23			23	64		Tan silty clay
						H-1-24				41	20	"
						H-1-25			25	50	29	Gray and yellow very sandy clay
	30					H-1-26			18	25	3	Gray and yellow clayey silt and sand-water bearing

Driller Logger J. N. Anagnos Title

Indicate each foot by shading for core recovery, leaving blank for no core recovery, and cross-mark (X) for undisturbed laboratory samples taken.

Texas Highway Department
Form 854

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 2 of 2

County _____ Structure _____ District No. _____
Highway No. _____ Hole No. H-1 Date _____
Control _____ Station _____ Grd. Elev. _____
Project No. _____ Loc. from Centerline _____ Rt. _____ Lt. _____ Grd. Water Elev. _____

Elev. (Ft.)	Depth (Ft.)	Samples	Log	THD PEN. TEST No. of Blows 1st 6"	THD PEN. TEST No. of Blows 2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	30					H-1-27			17	22	0	Gray and yellow clayey silt and sand
						H-1-28			18	23	8	Gray and yellow sandy clay
						H-1-29						"
						H-1-30			15			"
	35					H-1-31			16			"
						H-1-32						Becoming less sandy at 35'
						H-1-33						"
						H-1-34						"
						H-1-35						Becoming more sandy at 38'
	40					H-1-36						"
						H-1-37						"
						H-1-38						"
						H-1-39						Tan and gray clay with silt seams,
						H-1-40						"
	45					H-1-41						"
						H-1-42			21			"
	50											

Driller _____ Logger J. N. Anagnos Title _____

Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

Texas Highway Department
Form 864

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 1 of 2

County Harris
Highway No. SH225 and IH610
Control
Project No. 3-5-65-89

Structure Test shafts
Hole No. H-2
Station 98+25 (South Loop East)
Loc. from Centerline Rt. 100' Lt.

District No.
Date 14 Nov. 1967
Grd. Elev. +35'
Grd. Water Elev.

Elev. (Ft.)	Depth (Ft.)	Sample	Log	THD PEN. TEST No. of Blows 1st 6"	THD PEN. TEST No. of Blows 2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	0											Lt. gray, yellow, and black clay with some calcareous material - fill
						H-2-51						"
						H-2-52						Tan and gray clay
	5					53 54 H-2-1						"
						H-2-2						"
						H-2-3						Tan and gray clay - some calcareous material
												"
	10					H-2-5						Yellow and gray clay - some calcareous material
						H-2-6						"
						H-2-7						Tan and gray clay - some calcareous material
						H-2-8						"
						H-2-9						"
						H-2-10						Tan and gray clay with sand pockets
	15					H-2-11						"
						H-2-12						Tan clay
						H-2-13						"
						14 15 16						"
	20					17 18 19						"
						20 21 22						"
						23 24 25						"
	25					26 27 28						Tan clay - slightly silty
						29 30 31						"
												Tan clay with silt lenses
	30											"
												Gray and yellow sandy clay
												Gray and yellow clayey silt and sand

Driller Logger J. N. Anagnos Title

(Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken

Texas Highway Department
Form 384

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 2 of 2

County ______ Structure ______ District No. ______
Highway No. ______ Hole No. H-2 Date ______
Control ______ Station ______ Grd. Elev. ______
Project No. ______ Loc. from Centerline Rt. ______ Lt. ______ Grd. Water Elev. ______

Elev. (Ft.)	Depth (Ft.)	Samples†	Log	THD PEN. TEST No. of Blows 1st 6"	2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	30					32						Gray and yellow clayey silt and sand
						33 34						"
						35				40	24	Gray and yellow sandy clay
						36 37				33	19	"
	35											"
												"
						38				40	22	Becoming mottled with black clay and less
						39 40			16	38	24	sandy at 36'.
						41						Gray and yellow clay
	40					42 43						"
						44						Gray, yellow, and tan clay - some
						45						calcareous material.
						46						Becoming gray and tan at 42'.
						47 48						"
	45					49 50						"

Driller ______ Logger J. N. Anagnos Title ______

†Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

Texas Highway Department
Form 644

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 1 of 2

County Harris | Structure Test shafts | District No.
Highway No. SH225 and IH610 | Hole No. H-3 | Date 15 Nov. 1967
Control | Station 98+80 (South Loop East) | Grd. Elev. +35'
Project No. 3-5-65-89 | Loc. from Centerline Rt. 60 Lt. | Grd. Water Elev.

Elev. (Ft.)	Depth (Ft.)	Samples	Log	THD PEN. TEST No. of Blows 1st 6"	2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	0					H-3-1						Tan clay with calcareous material - fill.
								131.7				"
						H-3-2		126.8				Gray and tan clay - some calcareous material.
						H-3-3		124.3				"
	5					H-3-4		123.7				Gray and tan clay.
						H-3-5		125.0				"
						H-3-6		123.8				"
						H-3-7		124.0				"
						8 9 10		128.1				"
	10					11						"
						12 13		127.1				Tan silt
						14 15 16		124.5				Tan clay
						17						"
	15					18 19		119.2				"
						20						"
						21 22		129.1				"
						H-3-23		129.9				"
						H-3-24		128.8				"
	20					25						"
						26 27		130.5				"
						28						Tan clay with few gray sand lenses.
						29 30		126.6				Tan clay
						31						"
	25					32 33		133.1				"
						34						Tan clay with silt lenses
						35 36		128.7				"
						37						"
						38 39		131.1				Gray and yellow sandy clay.
	30											

Driller | Logger J. N. Anagnos | Title

(Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

Texas Highway Department
Form 564

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 2 of 2

County ______ Structure ______ District No. ______
Highway No. ______ Hole No. H-3 Date ______
Control ______ Station ______ Grd. Elev. ______
Project No. ______ Loc. from Centerline ______ Rt. ______ Lt. ______ Grd. Water Elev. ______

Elev. (Ft.)	Depth (Ft.)	Samples†	Log	THD Pen. Test No. of Blows 1st 6"	2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Description of Material and Remarks
	30											
						40 41		134.1				Gray and yellow clayey sand - water bearing
						42						"
						H-3-43		139.2				Gray and yellow sandy clay.
						H-3-44		139.8				"
						H-3-45		138.8				"
	35					46 47						"
						48						Gray, yellow, and black clay with some sand.
						49 50		136.5				"
						51						"
						52 53		135.6				"
	40					54						"
						55 56		134.5				"
						H-3-57		125.9				Gray and tan clay - some calcareous material
						H-3-58		129.1				"
						59						"
	45					60 61		131.7				"
	50											

Driller ______ Logger J. N. Anagnos Title ______

†Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

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Texas Highway Department
Form 336

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 1 of 2

County Harris | Structure Test shaft | District No.
Highway No. SH225 and IH610 | Hole No. H-4 | Date 16 Nov. 1967
Control | Station 98+80 (South Loop East) | Grd. Elev. +35'
Project No. 3-5-65-89 | Loc. from Centerline | Rt. 66' Lt. | Grd. Water Elev.

Elev. (Ft.)	Depth (Ft.)	Sample	Log	THD PEN. TEST No. of Blows 1st 6"	THD PEN. TEST No. of Blows 2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	0											
				5	4							No cores recovered
				6	6							No visual descriptions
	5			6	6							
				6	7							Standard T.H.D. Penetrometer Test
				6	7							
												3 in. diameter standard cone
				11	9							170 in. hammer
	10											24 in. drop height
				9	8							
				9	9							
	15			10	11							
				13	11							
				13	13							
	20											
				15	12							
				14	15							
	25			13	14							
				14	15							
				20	25							
	30											

Driller | Logger J. N. Anagnos | Title

Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

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Texas Highway Department
Form [illegible]

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

County ________ Structure ________ District No. ________
Highway No. ________ Hole No. H-4 Date 16 Nov. 1967
Control ________ Station ________ Grd. Elev. ________
Project No. ________ Loc. from Centerline Rt. ____ Lt. ____ Grd. Water Elev. ________

Elev. (Ft.)	Depth (Ft.)	Samples†	Log	THD Pen. Test No. of Blows 1st 6"	2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Description of Material and Remarks
	30			8	8							
				9	9							
	35			11	12							
				14	17							
				23	32							
	40			17	23							
				20	19							
	45			21	23							

Driller ________ Logger J. N. Anagnos Title ________

†Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

Texas Highway Department
Form 854

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 1 of 2

County Harris | Structure Test shafts | District No.
Highway No. SH225 and IH 610 | Hole No. H-5 | Date 1 Aug. 1969
Control | Station 98+08 (South Loop East) | Grd. Elev. +35'
Project No. 3-5-65-89 | Loc. from Centerline | Rt. 71' Lt. | Grd. Water Elev.

Elev. (Ft.)	Depth (Ft.)	Samples†	Log	THD PEN. TEST No. of Blows 1st 6"	THD PEN. TEST No. of Blows 2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	0					H-5-1						Organic fill
												Stiff tan and gray mottled clay.
						H-5-2						"
						H-5-3						"
	5					H-5-4						Becoming calcareous and fissured at 5'.
						H-5-5						"
						H-5-6						Becoming Non-calcareous at 7'.
						H-5-7						"
	10					H-5-8						Stiff tan and gray mottled clay with small
						H-5-9						calcareous nodules.
						H-5-10						"
												Becoming red at 12'.
						H-5-11						Becoming very slickensided red and gray mottled
						H-5-12						clay at 13'.
	15											Very silty clay 15½' - 16' water bearing
						H-5-13						Stiff, fissured tan clay.
						H-5-14						"
						H-5-15						"
	20					H-5-16						"
						H-5-17						Stiff, fissured red silty clay with silt seams
						H-5-18						"
						H-5-19						"
						H-5-20						"
	25					H-5-21						Stiff red fissured clay
						H-5-22						"
						H-5-23						Very silty clay with fine sand.
						H-5-24						Lt. gray clayey silt with sand - water bearing
						H-5-25						at 29'.
	30					H-5-26						"

Driller | Logger M. W. O'Neill | Title

†Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

29-850 FZP1 3-69 10M

Texas Highway Department
Form 564

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

Sheet 2 of 2

County ______ Structure ______ District No. ______
Highway No. ______ Hole No. H-5 Date ______
Control ______ Station ______ Grd. Elev. ______
Project No. ______ Loc. from Centerline Rt. ______ Lt. ______ Grd. Water Elev. ______

Elev. (Ft.)	Depth (Ft.)	Samples†	Log	THD Pen. Test No. of Blows 1st 6"	2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Description of Material and Remarks
	30											
						H-5-27						Lt. gray soft clayey silt with sand.
						H-5-28						"
						H-5-29						Stiffer silty clay with sand- brittle, fissured
						H-5-30						"
	35					H-5-31			15	33	18	"
						H-5-32						Becoming sandier and more calcareous
						H-5-33			15	37	23	"
						H-5-34						Hard gray-to-tan sandy, silty clay
						H-5-35						Very stiff silty clay with some sand.
	40					H-5-36			14	32	18	"
						H-5-37						Very stiff silty clay.
						H-5-38			14	42	28	Becoming streaked with sand 41' - 42'.
						H-5-39			22	63	41	Very stiff tan-to-red and lt. gray mottled clay
						H-5-40						"
	45					H-5-41			23	59	40	"
						H-5-42			22	64	42	Becoming slickensided with calcareous material.
						H-5-43			20	54	31	"
						H-5-44						"
						H-5-45			16	43	25	Red and gray silty clay with fissures.
	50					H-5-46						"
				49	39							"
						H-5-47						Very stiff fissured red clay with sand streaks
						H-5-48			26	71	43	Same but no sand.
						H-5-49			25	70	40	Red and gray stiff mottled clay
	55					H-5-50			25	76	47	"
				20	25							"
						H-5-51			21	57	34	"
						H-5-52			22	62	35	"
						H-5-53						Very stiff red clay with calcareous nodules.
	60			24	24	H-5-54						Turning slightly silty at 60'.

Driller ______ Logger M. W. O'Neill Title ______

†Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

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Texas Highway Department
Form 884

DRILLING REPORT

(For use with Undisturbed Sampling & Testing)

County Harris | Structure Test shafts | District No.
Highway No. SH225 and IH610 | Hole No. H-6 | Date 4 Nov. 1969
Control | Station 98+24 (South Loop East) | Grd. Elev. +35'
Project No. 3-5-65-89 | Loc. from Centerline Rt. 75' Lt. | Grd. Water Elev.

Elev. (Ft.)	Depth (Ft.)	Samples	Log	THD PEN. TEST No. of Blows 1st 6"	THD PEN. TEST No. of Blows 2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	DESCRIPTION OF MATERIAL AND REMARKS
	0					H-6-1						Soft silty clay - tan and gray coloring
						H-6-2						Becoming calcareous at 2'.
						H-6-3						Becoming Non-calcareous at 3'.
						H-6-4						"
	5					H-6-5						"
						H-6-6						Red and gray mottled clay.
						H-6-7						Stiff red clay with little gray
						H-6-8						"
						H-6-9						"
	10					H-6-10						Becoming tan with gray streaks at 10'.
						H-6-11						"
						H-6-12						"
						H-6-13						Lt. red clay with calcareous deposits.
						H-6-14						"
	15					H-6-15						Silt
						H-6-16						Stiff red silty clay with some silt lenses.
						H-6-17						"
						H-6-18						"
						H-6-19						"
	20					H-6-20						"
						H-6-21						"
						H-6-22						"
						H-6-23						"
						H-6-24						Becoming heavily fissured at 24'.
	25					H-6-25						"
						H-6-26						Stiff red clay - not silty
						H-6-27						"
						H-6-28						Silty clay.
						H-6-29						Gray silty clay.
	30					H-6-30						"

Driller | Logger W. R. Barker | Title

Indicate each foot by shading for core recovery, leaving blank for no core recovery, and crossing (X) for undisturbed laboratory samples taken.

DRILLING REPORT
(For use with Undisturbed Sampling & Testing)

Sheet 2 of 2

County ______ Structure ______ District No. ______
Highway No. ______ Hole No. H-6 Date ______
Control ______ Station ______ Grd. Elev. ______
Project No. ______ Loc. from Centerline ______ Rt. ______ Lt. ______ Grd. Water Elev. ______

Elev. (Ft.)	Depth (Ft.)	Samples	Log	THD Pen. Test No. of Blows 1st 6"	2nd 6"	Sample Number	Lat. Pressure & Ult. Stress (psi)	Wet Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Description of Material and Remarks
	30					H-6-31						Gray silt.
						H-6-32						"
						H-6-33						Gray silty clay.
						H-6-34						Gray and tan silty clay.
	35					H-6-35						"
						H-6-36						Very silty at 35' - 37'.
						H-6-37						"
						H-6-38						Silty clay with sand lenses.
						H-6-39						Very silty gray clay - calcareous.
	40					H-6-40						"
						H-6-41						"
						H-6-42						"
						H-6-43						Stiff red and gray clay with some sand and
						H-6-44						a few large calcareous deposits.
	45					H-6-45						
						H-6-46						
	50											

Driller ______ Logger W. R. Barker Title ______

APPENDIX B

HYDROMETER RESULTS

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TABLE B.1. HYDROMETER DATA - SH225 SITE

Sample Number	Depth (feet)	Per Cent Sand (≥ No. 200 Sieve)	Per Cent Silt (Passing No. 200 Sieve but > 5 microns)	Per Cent Clay (≤ 5 microns)
H-5-9	10.5	4	20	76
H-5-13	16.5	1	31	68
H-5-14	17.5	1	14	85
H-5-16	19.5	0	45	55
H-5-17	20.5	0	26	74
H-5-18	21.5	0	22	78
H-5-19	22.5	0	38	62
H-5-20	23.5	0	10	90
H-5-21	24.5	31	22	47
H-5-23	26.5	12	29	59
H-5-26	29.5	17	61	22
H-5-27	30.5	16	62	22
H-5-32	35.5	6	70	24
H-5-34	37.5	25	43	32
H-5-35	38.5	20	40	40
H-5-40	43.5	3	35	62
H-5-41	44.0	0	30	70
H-5-53	58.5	2	43	55

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APPENDIX C

TABULATION OF RESULTS OF UNCONFINED, DIRECT SHEAR, PENETROMETER, AND U.T. TRIAXIAL TESTS

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TABLE C.1. SUMMARY OF CONTROLLED, STRAIN UNCONFINED COMPRESSION TEST RESULTS (BORING H-1)

Mean Depth (feet)	Confining Pressure (psi)	Shear Strength $\frac{\sigma_1-\sigma_3}{2}$ (psi)	Average Shear Strength (psi)	ϵ_{50}
4.0	0	5.9	8.3	0.0080
	0	10.6		0.0086
11.5	0	10.0	11.0	0.002
	0	11.8		0.003
	0	11.1		0.003
19.0	0	17.7	16.1	0.003
	0	14.5		0.006
23.0	0	15.9	12.8	0.004
	0	7.1		0.023
	0	15.3		0.009
26.5	0	9.1	14.2	0.0025
	0	18.6		0.0070
	0	14.8		0.0085
31.0	0	7.6	7.8	0.062
	0	7.7		0.063
	0	8.0		0.035
33.0	0	15.7	16.7	0.015
	0	21.0		0.020
	0	13.4		0.006
38.0	0	16.4	20.1	---
	0	18.4		---
	0	25.4		---
43.0	0	36.5	24.4	0.010
	0	15.7		0.007
	0	19.8		0.005
	0	29.1		0.006
	0	20.7		0.005

TABLE C.2. SUMMARY OF CONTROLLED STRESS TRIAXIAL TEST RESULTS (BORING H-2)

Mean Depth (feet)	Confining Pressure (psi)	Shear Strength $\frac{\sigma_1-\sigma_3}{2}$ (psi)	Average Shear Strength (psi)	E_o (psi)	$\frac{E_o}{c_u}$ *	ϵ_{50}
4.0	0	13.8	11.9	3800	215	0.0040
	5	14.8		2300		0.0067
	10	8.1		1500		0.0060
	15	10.8		2700		0.0040
11.5	10	18.6	15.3	3200	250	0.0057
	10	11.7		2900		0.0040
	10	22.2		4400		0.0065
	10	11.2		2700		0.0042
	10	14.4		3100		0.0045
	30	13.6		6000		0.0033
19.0	10	8.3	20.0	3000	185	0.0030
	10	27.9		3100		0.0090
	15	20.2		3200		0.0070
	10	20.8		2700		0.0075
	17.5	23.0		3600		0.0065
23.0	10	18.5	19.2	4000	180	0.0075
	15	16.8		3000		0.0066
	15	19.0		3000		0.0090
	15	17.5		2500		0.0110
	10	12.9		2400		0.0060
	10	10.2		3000		0.0050
	10	20.7		2400		0.0084
	15	29.2		3200		0.0092
	20	26.0		5500		0.0070
26.5	15	15.6	15.3	6500	320	0.003
	10	20.3		4200		0.005
	15	10.1		3500		0.006

*Average initial Young's modulus divided by average shear strength.

TABLE C.2. SUMMARY OF CONTROLLED STRESS TRIAXIAL TEST RESULTS (BORING H-2) (Continued)

Mean Depth (feet)	Confining Pressure (psi)	Shear Strength $\frac{\sigma_1-\sigma_3}{2}$ (psi)	Average Shear Strength (psi)	E_o (psi)	$\frac{E_o}{c_u}$*	ϵ_{50}
28.5	20	12.3	12.4	1600	130	0.026
	25	7.5		Nonlin.**		0.025
	30	17.5		Nonlin.**		0.032
31.0	20	5.2	8.9	170	27	0.030
	25	12.3		250		0.053
	30	9.2		250		0.036
33.0	25	20.3	23.5	Nonlin.**	57	0.039
	30	26.6		Nonlin.**		0.025
	35	20.9		1200		0.048
	25	29.7		Nonlin.**		0.030
	20	19.8		Nonlin.**		0.026
38.0	30	31.1	30.7	2000	67	0.019
	30	29.5		1500		0.008
	35	34.0		Nonlin.**		0.008
	30	28.0		3200		0.030
43.0	30	22.6	25.5	Nonlin.**	110	0.017
	35	25.3		Nonlin.**		0.002
	30	28.8		Nonlin.**		0.019
	30	25.3		2800		0.009

*Average initial Young's modulus divided by average shear strength.

**Nonlinear in initial portion of stress-strain curve. E_o could not be determined reliably.

TABLE C.3. SUMMARY OF CONTROLLED STRAIN TRIAXIAL TEST RESULTS (BORINGS H-5 AND H-6)

Mean Depth (feet)	Confining Pressure (psi)	Shear Strength $\frac{\sigma_1-\sigma_3}{2}$ (psi)	Average Shear Strength (psi)	E_o (psi)	$\frac{E_o}{c_u}$*	ϵ_{50}
4.0	10	14.4	18.3	2500	140	0.008
(H-6)	15	17.3		2500		0.009
	10	18.5		2600		0.009
	15	17.8		2700		0.007
	10	20.9		2700		0.009
	15	21.7		3000		0.008
5.0	15	34.6	28.5	3000	120	0.013
(H-5)	10	21.6		2500		0.011
	10	32.6		3400		0.012
	15	23.4		3000		0.008
	10	24.2		3100		0.009
	15	24.1		3400		0.008
	15	30.6		3400		0.010
	10	30.9		3100		0.011
	15	30.2		3900		0.008
	10	32.9		4200		0.009
13.5	10	16.5	19.9	1800	140	0.011
(H-5)	15	14.5		3300		0.004
	10	20.8		3400		0.008
	15	21.3		3200		0.007
	10	17.7		1800		0.011
	15	26.4		Nonlin.		0.008
18.0	10	15.9	17.2	2000	160	0.010
(H-5)	15	15.9		2900		0.006
	15	20.0		3100		0.008
	10	14.6		2700		0.007
	10	19.1		3700		0.006
	15	20.4		2700		0.011
	10	15.1		1800		0.012

*Average initial Young's modulus divided by average shear strength.

TABLE C.3. SUMMARY OF CONTROLLED STRAIN TRIAXIAL TEST RESULTS (BORINGS H-5 AND H-6) (Continued)

Mean Depth (feet)	Confining Pressure (psi)	Shear Strength $\frac{\sigma_1-\sigma_3}{2}$ (psi)	Average Shear Strength (psi)	E_o (psi)	$\frac{E_o}{c_u}$*	ϵ_{50}
37.0	20	16.8	20.4	1400	90	0.017
(H-5)	30	13.2		1300		0.016
	20	27.1		3000		0.012
	30	22.2		1600		0.013
	30	22.4		2000		0.030
49.5	30	30.3	31.7	2700	80	0.016
(H-5)	35	33.0		2500		0.019
55.5	30	29.4	28.7	5500	139	0.008
(H-5)	30	29.4		4700		0.008
	30	14.2		4000		0.006
	30	14.1		2400		0.008
	30	43.7		4500		0.014
	30	27.8		4000		0.010
	35	27.8		3800		0.010
	35	35.4		3900		0.011
	35	20.6		4000		0.009
	35	47.1		4400		0.013
	35	29.0		3300		0.012
	35	25.6		3600		0.009

*Average initial Young's modulus divided by average shear strength.

TABLE C.4. DIRECT SHEAR TESTS, SH225 SITE

Sample	Depth (feet)	Maximum Shear Stress (psi)	Maximum Shear Stress (tsf)
H-2-1	5.5	16.1	1.16
H-2-3	7.5	15.5	1.12
H-2-5	9.5	16.4	1.18
H-2-9	13.5	15.3	1.10
H-2-13	17.5	23.9	1.72
H-2-18	21.0	27.3	1.96
H-2-24	25.0	16.4	1.18
H-2-28	27.5	17.0	1.22
H-5-6	7.5	13.4	0.97
H-5-7	8.5	13.9	1.00
H-5-8	9.5	14.6	1.05
H-5-17	20.5	15.8	1.14
H-5-20	23.5	15.8	1.14
H-2-32	30.0	7.8	0.56
H-5-26	29.5	12.0	0.86
H-2-38	36.0	24.5	1.76
H-2-39	37.0	17.6	1.27
H-2-40	37.5	20.0	1.44
H-2-44	40.5	17.0	1.22
H-2-45	41.5	17.0	1.22
H-2-48	44.0	23.3	1.68
H-5-39	42.5	20.7	1.49
H-5-40	43.5	23.6	1.70
H-5-42	45.5	26.3	1.89
H-5-43	46.5	26.4	1.90

TABLE C.5. TEXAS HIGHWAY DEPARTMENT (T.H.D.) CONE PENETROMETER TESTS
(170 Pound Hammer, Dropped 2 Feet)

Boring	Depth (feet)	Blows/Foot	Shear* Strength (tsf)
H-4	2.5	9	0.24
H-4	3.5	12	0.32
H-4	4.5	12	0.32
H-4	5.5	13	0.35
H-4	6.5	13	0.35
H-4	8.5	20	0.53
H-4	10.5	17	0.45
H-4	12.5	18	0.48
H-4	14.5	21	0.56
H-4	16.5	24	0.64
H-4	18.5	26	0.70
H-4	20.5	27	0.72
H-4	22.5	29	0.77
H-4	24.5	27	0.72
H-4	26.5	29	0.77
H-4	28.5	45	1.17
H-4	30.5	16	0.43
H-4	32.5	18	0.48
H-4	34.5	23	0.61
H-4	36.5	31	0.81
H-4	38.5	55	1.43
H-4	40.5	40	1.04
H-4	42.5	39	1.01
H-4	44.5	44	1.14
H-5	50.5	88	2.28
H-5	55.5	45	1.17
H-5	60.5	48	1.25

*Fig. 1, p. 4-43, Foundation Manual, Bridge Division, Texas Highway Department (Texas Highway Department, 1964).

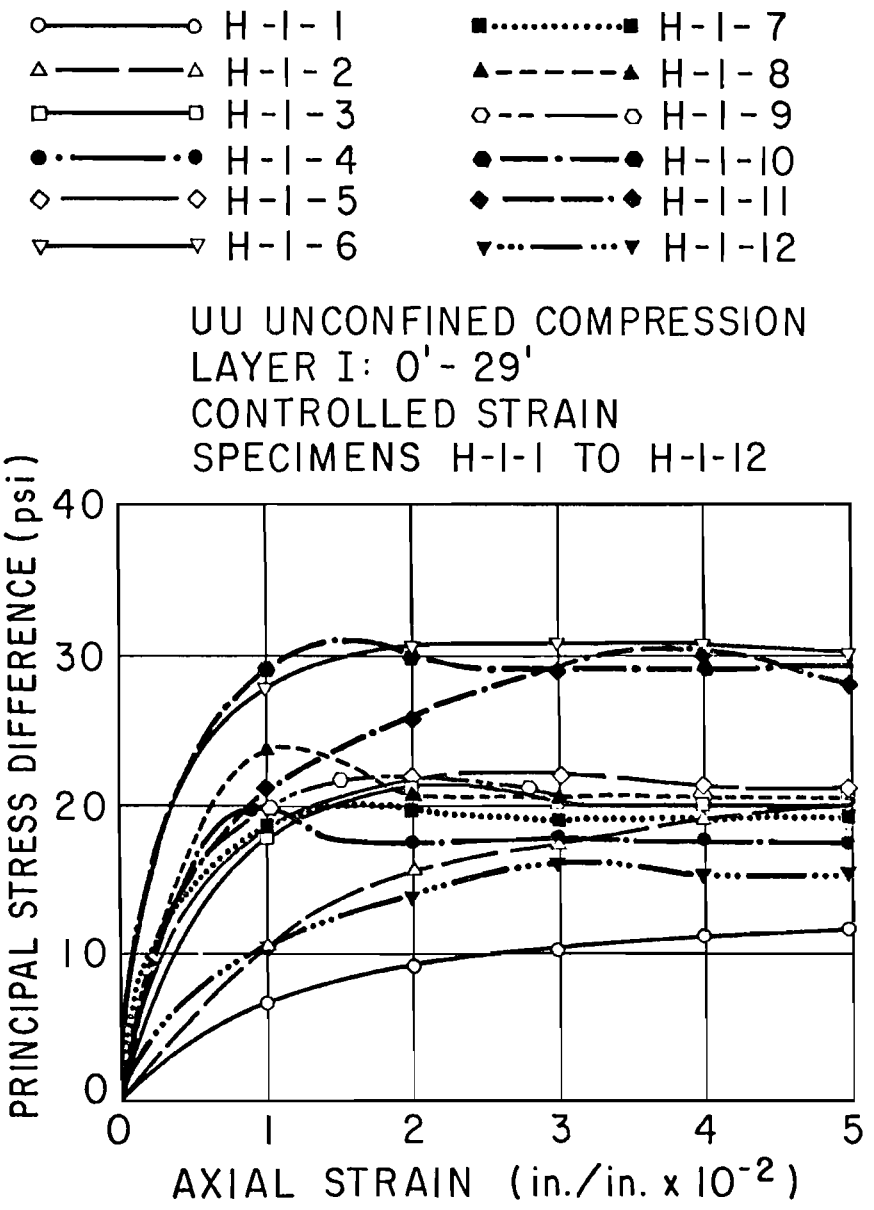

Fig. C.1. Individual Unconfined Compression Stress-Strain Curves, Layer I, H-1-1 to H-1-12

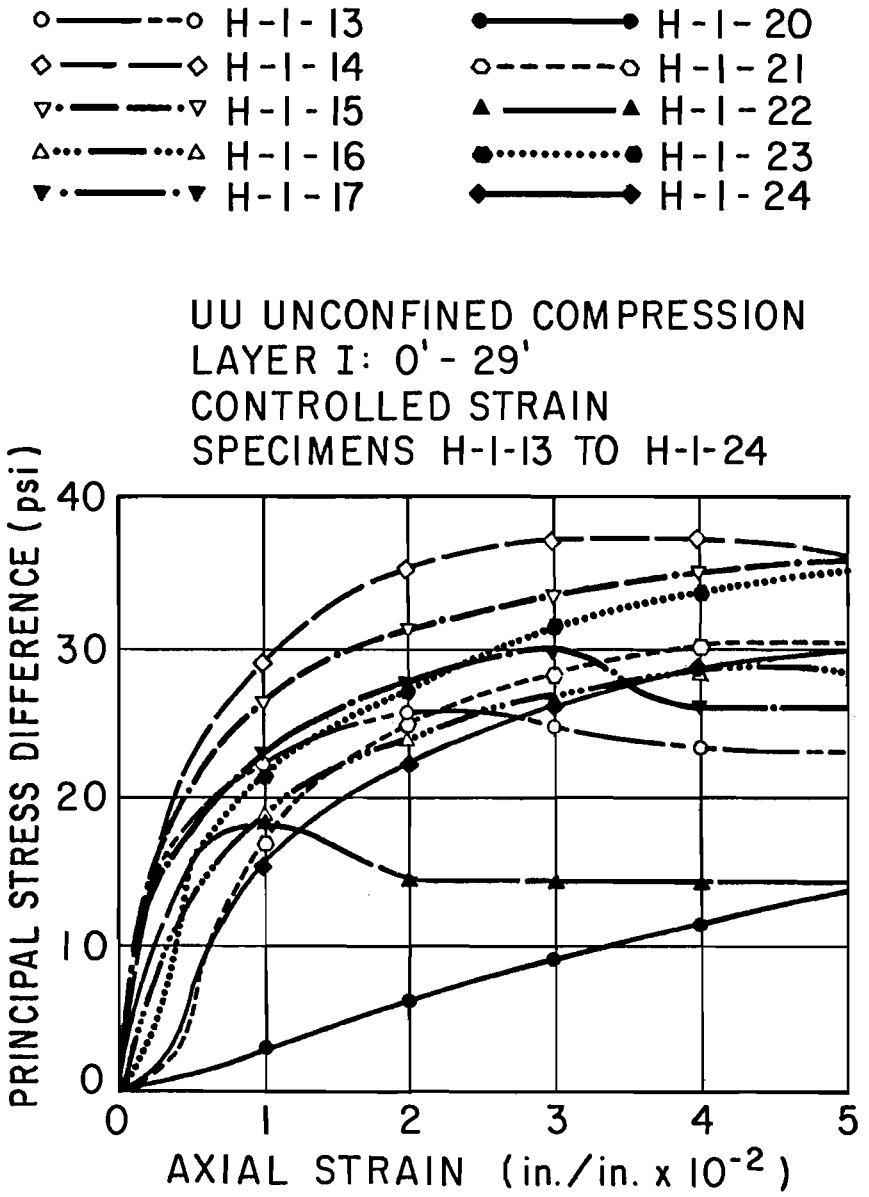

Fig. C.2. Individual Unconfined Compression Stress-Strain Curves, Layer I, H-1-13 to H-1-24

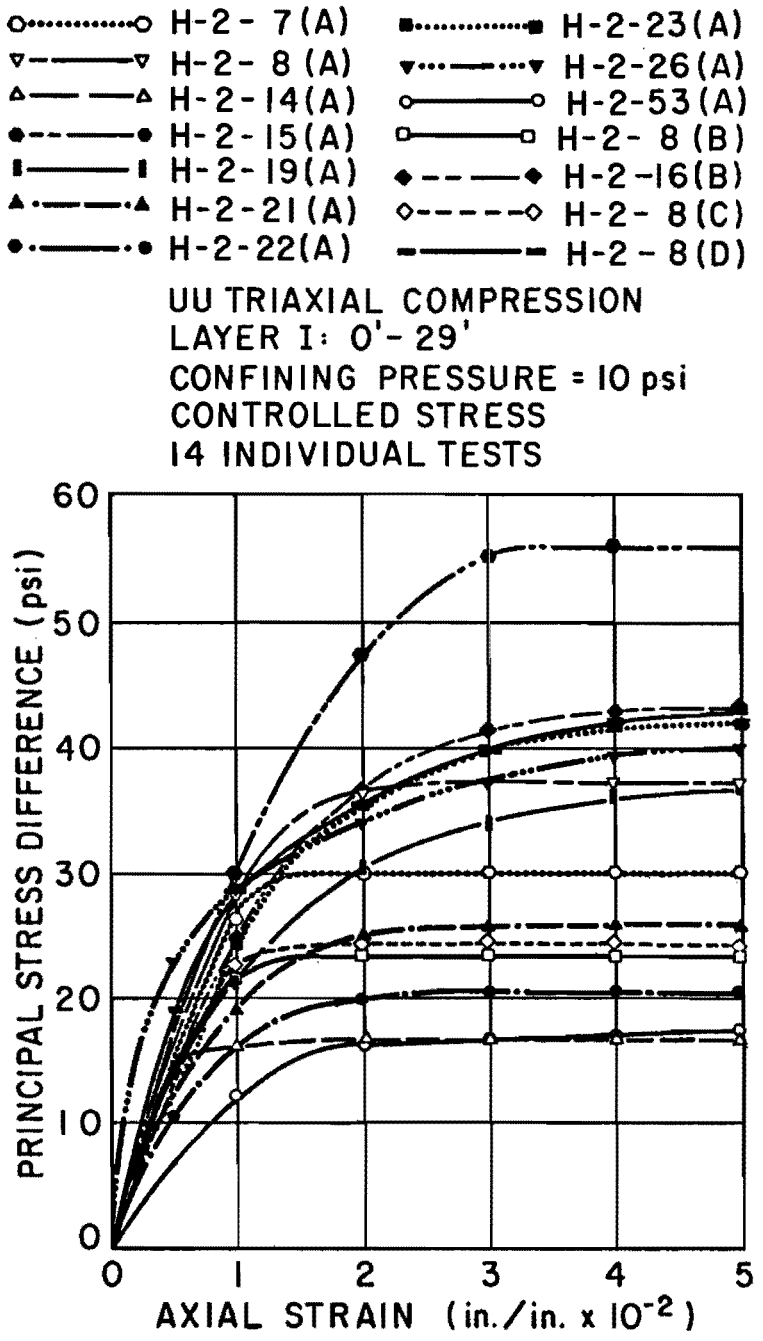

Fig. C.3. Individual Triaxial Stress-Strain Curves, Layer I, Controlled Stress, 10 psi

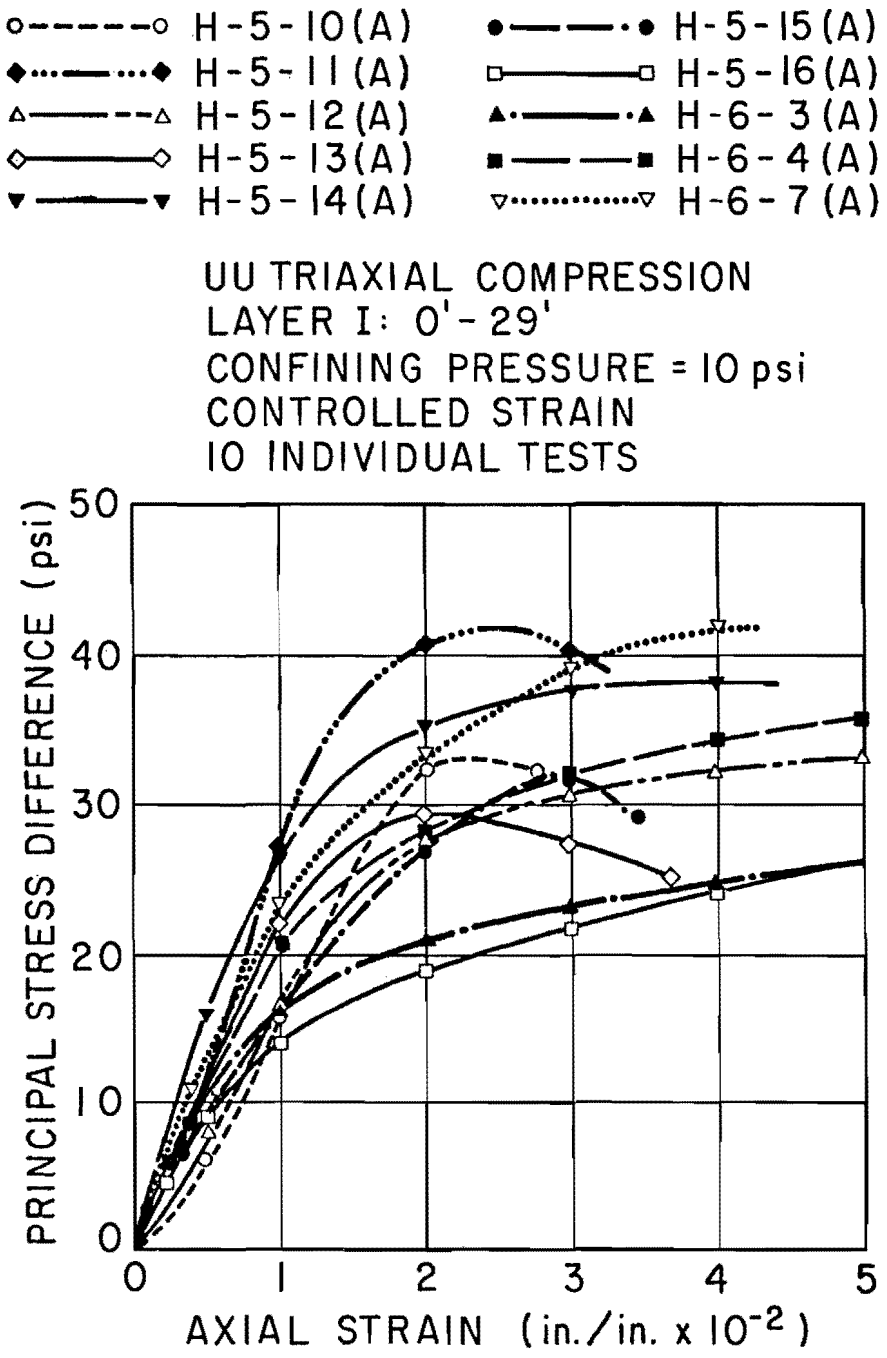

Fig. C.4. Individual Triaxial Stress-Strain Curves, Layer I, Controlled Strain, 10 psi

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APPENDIX D

MORTAR MIGRATION TEST RESULTS

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TABLE D.1. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: PLAIN SOIL
LAYER NO. : I, 0-29 FEET

Displacement (in.)	Stress (psi)											
	H-2-3	H-2-18	H-2-24	H-2-1	H-2-5	H-2-13	H-5-6	H-5-7	H-5-8	H-5-17	H-5-20	Average
0.000	0	0	0	0	0	0	0	0	0	0	0	0
0.002	8.8	2.9	3.6	11.3	15.0	12.5	2.7	3.5	8.4	6.9	4.0	7.2
0.004	9.3	3.8	5.8	11.8	15.7	13.2	4.0	5.4	9.4	10.5	10.7	9.1
0.006	10.0	4.0	7.1	12.2	16.0	13.5	5.3	6.6	10.3	11.2	12.2	9.9
0.008	10.3	5.6	8.4	12.5	16.3	14.4	6.1	7.5	10.9	12.5	13.2	10.7
0.010	10.6	6.7	9.2	12.4	16.4	14.9	7.0	8.5	11.3	13.7	13.7	11.3
0.015	11.3	9.7	11.5	13.7	16.3	15.8	8.5	9.5	12.0	14.2	14.2	12.4
0.020	12.0	12.1	12.8	14.3	16.0	16.8	10.0	10.0	12.7	14.6	14.5	13.3
0.025	12.5	13.5	14.1	14.7	15.7	17.9	10.7	10.4	13.3	15.0	14.7	13.9
0.030	12.9	14.2	15.2	15.0	15.5	19.0	11.4	11.2	13.6	15.2	15.0	14.4
0.035	13.4	16.0	15.8	15.4	15.3	20.0	12.0	11.6	13.8	15.4	15.2	14.9
0.040	13.9	16.6	16.1	15.6	----	20.6	12.2	12.1	13.9	15.6	15.4	----
0.045	14.1	17.0	16.3	15.8	----	21.5	12.5	12.6	14.0	15.7	15.6	----
0.050	14.4	17.6	16.3	15.9	----	22.1	12.9	13.1	14.1	15.7	15.7	----
0.055	14.7	18.2	16.4	16.0	----	22.6	13.1	13.4	14.2	15.8	15.8	----
0.060	15.0	19.3	16.4	16.0	----	22.9	13.2	13.5	14.4	15.8	15.8	----
0.065	15.3	20.6	16.4	16.1	----	23.1	13.3	13.6	14.5	----	----	----
0.070	15.4	21.6	----	16.1	----	23.6	13.3	13.8	14.5	----	----	----
0.075	15.5	22.7	----	16.0	----	23.6	13.3	13.8	14.5	----	----	----
0.080	15.5	24.3	----	----	----	23.7	13.4	13.9	14.6	----	----	----
0.085	----	24.5	----	----	----	23.8	13.4	13.9	14.6	----	----	----
0.090	----	25.4	----	----	----	23.9	13.4	----	14.6	----	----	----
0.095	----	26.2	----	----	----	23.6	----	----	14.6	----	----	----
0.100	----	27.3	----	----	----	----	----	----	----	----	----	----
0.105	----	27.3	----	----	----	----	----	----	----	----	----	----
0.110	----	27.3	----	----	----	----	----	----	----	----	----	----
0.015	----	27.1	----	----	----	----	----	----	----	----	----	----
0.120	----	27.2	----	----	----	----	----	----	----	----	----	----
0.125	----	27.3	----	----	----	----	----	----	----	----	----	----
0.130	----	27.2	----	----	----	----	----	----	----	----	----	----
0.135	----	27.0	----	----	----	----	----	----	----	----	----	----
0.140	----	26.8	----	----	----	----	----	----	----	----	----	----

TABLE D.2. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: INTERFACE
LAYER NO. : I, 0-29 FEET

Displacement (in.)	Stress (psi)										
	H-2-3	H-2-18	H-2-24	H-2-1	H-2-5	H-2-13	H-5-7	H-5-8	H-5-17	H-5-20	Average
0.000	0	0	0	0	0	0	0	0	0	0	0
0.002	12.9	20.0	20.0	11.5	8.6	14.9	12.4	13.0	14.2	11.5	13.9
0.004	13.8	24.5	20.0	12.3	11.9	21.6	13.9	13.1	15.4	14.2	16.1
0.006	14.3	26.8	18.3	12.4	13.7	----	14.4	13.2	15.8	15.0	16.0
0.008	14.3	----	17.9	12.0	14.5	----	14.7	13.4	16.5	15.3	14.8
0.010	14.4	29.0	16.8	12.0	14.9	14.2	14.9	13.6	16.8	----	----
0.015	14.4	29.0	16.3	12.0	11.2	14.3	14.8	13.7	17.1	----	----
0.020	14.3	29.3	16.3	----	----	14.3	14.3	13.9	----	----	----
0.025	14.2	29.1	16.3	----	----	14.1	14.2	14.3	----	----	----
0.030	----	----	16.3	----	----	13.9	----	14.5	----	----	----
0.035	----	----	----	----	----	14.0	----	14.7	----	----	----
0.040	----	----	----	----	----	----	----	14.8	----	----	----
0.045	----	----	----	----	----	----	----	15.0	----	----	----
0.050	----	----	----	----	----	----	----	15.1	----	----	----
0.055	----	----	----	----	----	----	----	15.0	----	----	----
0.060	----	----	----	----	----	----	----	15.0	----	----	----
0.065	----	----	----	----	----	----	----	15.0	----	----	----
0.070	----	----	----	----	----	----	----	15.0	----	----	----
0.075	----	----	----	----	----	----	----	15.1	----	----	----

TABLE D.3. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/8 INCH FROM INTERFACE
LAYER NO. : I, 0-29 FEET

Displacement (in.)	Stress (psi)						
	H-2-18	H-2-24	H-2-13	H-2-5	H-2-1	H-5-8	Average
0.000	0	0	0	0	0	0	0
0.002	2.0	3.0	2.5	15.1	7.4	12.2	7.0
0.004	4.1	7.3	2.5	15.7	8.0	12.0	8.3
0.006	7.2	10.1	2.8	16.0	8.1	13.2	9.6
0.008	9.4	11.7	2.9	16.1	7.7	13.4	10.2
0.010	11.5	13.0	2.8	16.0	7.3	13.5	10.7
0.015	15.7	14.8	3.4	14.2	7.0	13.8	11.5
0.020	16.9	15.5	8.0	12.5	6.5	13.9	12.2
0.025	17.6	15.7	8.3	----	6.3	13.9	----
0.030	17.9	15.9	9.6	----	6.1	13.9	----
0.035	18.0	15.9	12.0	----	---	13.9	----
0.040	17.9	15.9	11.4	----	---	13.9	----
0.045	17.6	15.8	13.6	----	---	13.9	----
0.050	17.6	15.7	15.8	----	---	----	----
0.055	----	15.6	18.0	----	---	----	----
0.060	----	----	19.5	----	---	----	----
0.065	----	----	21.6	----	---	----	----
0.070	----	----	23.1	----	---	----	----
0.075	----	----	24.6	----	---	----	----
0.080	----	----	26.0	----	---	----	----
0.085	----	----	27.2	----	---	----	----
0.090	----	----	28.7	----	---	----	----
0.095	----	----	30.2	----	---	----	----
0.100	----	----	30.4	----	---	----	----

TABLE D.4. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/4 INCH FROM INTERFACE
LAYER NO. : I, 0-29 FEET

Displacement (in.)	Stress (psi)										
	H-2-3	H-2-18	H-2-24	H-2-5	H-2-1	H-2-13	H-5-20	H-5-17	H-5-8	H-5-7	Average
0.000	0	0	0	0	0	0	0	0	0	0	0
0.002	4.7	2.3	3.3	13.5	8.5	17.5	14.5	1.5	5.9	15.0	8.7
0.004	7.3	3.8	3.7	14.0	8.7	18.0	15.0	1.5	7.2	15.2	9.4
0.006	9.3	7.3	5.1	14.3	8.9	19.3	15.5	1.6	8.6	19.5	10.9
0.008	10.8	9.1	7.3	14.4	9.1	19.5	15.7	1.8	9.4	20.4	11.8
0.010	11.7	12.2	9.4	14.4	9.2	20.4	15.9	3.0	10.2	21.2	12.8
0.015	13.4	16.1	13.0	14.2	9.3	21.0	16.1	4.5	11.4	22.5	14.2
0.020	14.5	17.1	15.4	13.7	9.4	21.2	----	8.9	12.0	23.7	15.1
0.025	15.4	17.9	16.0	----	9.5	21.5	----	11.8	12.5	24.5	----
0.030	15.8	18.6	16.5	----	9.4	21.8	----	13.6	12.8	24.8	----
0.035	15.9	18.7	16.8	----	9.4	21.9	----	14.2	12.9	25.0	----
0.040	----	19.3	17.1	----	9.3	22.0	----	14.7	12.9	25.1	----
0.045	----	19.5	17.3	----	9.0	22.1	----	15.1	----	25.1	----
0.050	----	19.9	17.5	----	8.8	22.1	----	15.5	----	25.2	----
0.055	----	19.5	17.7	----	---	22.1	----	15.7	----	25.2	----
0.060	----	19.6	17.9	----	---	----	----	15.7	----	----	----
0.065	----	19.5	18.0	----	---	----	----	----	----	----	----
0.070	----	19.8	18.1	----	---	----	----	----	----	----	----
0.075	----	----	18.2	----	---	----	----	----	----	----	----
0.080	----	----	17.8	----	---	----	----	----	----	----	----
0.085	----	----	17.6	----	---	----	----	----	----	----	----

TABLE D.5. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 3/8 INCH FROM INTERFACE
LAYER NO. : I, 0-29 FEET

Displacement (in.)	Stress (psi)										
	H-2-3	H-2-18	H-2-24	H-2-13	H-2-1	H-5-6	H-5-6	H-5-6	H-5-17	H-5-20	Average
0.000	0	0	0	0	0	0	0	0	0	0	0
0.002	3.9	11.9	2.8	2.3	10.1	8.9	10.2	7.8	----	3.2	6.8
0.004	4.1	14.3	4.3	3.2	9.8	10.0	10.9	8.9	----	4.0	7.7
0.006	4.6	15.3	6.5	4.2	9.7	10.4	11.3	9.7	8.9	4.7	8.5
0.008	5.1	15.6	9.5	5.1	9.5	11.2	11.9	10.7	13.3	5.3	9.7
0.010	5.5	15.6	11.0	6.1	9.1	11.7	12.1	11.3	13.4	8.9	10.5
0.015	9.7	16.1	12.8	7.5	8.6	12.8	12.6	12.8	13.9	12.2	11.9
0.020	11.8	16.3	14.0	9.7	8.5	13.5	13.2	13.6	14.5	13.9	12.9
0.025	12.2	16.6	14.8	12.8	----	13.6	13.4	14.0	14.9	14.1	----
0.030	13.5	16.5	15.3	14.8	----	13.9	13.4	14.2	15.2	14.4	----
0.035	14.7	16.5	15.7	15.9	----	14.0	13.5	14.4	15.5	14.6	----
0.040	15.8	16.3	15.8	16.9	----	14.1	13.6	14.5	15.6	14.8	----
0.045	16.0	16.3	15.9	17.6	----	14.2	13.6	14.5	15.6	14.9	----
0.050	16.2	----	15.9	20.0	----	14.2	13.7	----	----	15.0	----
0.055	16.4	----	16.0	21.0	----	14.3	14.0	----	----	15.0	----
0.060	16.6	----	15.9	22.1	----	14.3	14.1	----	----	----	----
0.065	16.7	----	15.8	23.5	----	14.3	14.3	----	----	----	----
0.070	16.8	----	15.9	23.4	----	14.4	14.4	----	----	----	----
0.075	16.8	----	15.9	23.4	----	14.4	14.6	----	----	----	----
0.080	16.8	----	----	----	----	14.4	14.7	----	----	----	----
0.085	----	----	----	----	----	----	14.9	----	----	----	----
0.090	----	----	----	----	----	----	15.0	----	----	----	----
0.095	----	----	----	----	----	----	15.1	----	----	----	----
0.100	----	----	----	----	----	----	15.3	----	----	----	----
0.105	----	----	----	----	----	----	15.4	----	----	----	----
0.110	----	----	----	----	----	----	15.5	----	----	----	----
0.115	----	----	----	----	----	----	15.6	----	----	----	----
0.120	----	----	----	----	----	----	15.6	----	----	----	----

TABLE D.6. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: PLAIN SOIL
LAYER NO. : II, 29-32 FEET

Displacement (in.)	Stress (psi)		
	H-2-32	H-5-26	Average
0.000	0	0	0
0.002	2.3	1.5	1.9
0.004	3.4	1.9	2.7
0.006	4.7	2.3	3.5
0.008	4.9	2.6	3.8
0.010	5.4	2.9	4.2
0.015	6.1	3.6	4.9
0.020	6.5	4.2	5.4
0.025	6.8	5.0	5.9
0.030	7.1	5.6	6.4
0.035	7.4	6.1	6.8
0.040	7.6	6.5	7.1
0.045	7.8	7.0	7.4
0.050	7.6	7.5	7.6
0.055	---	8.0	---
0.060	---	8.8	---
0.065	---	9.4	---
0.070	---	9.9	---
0.075	---	10.2	---
0.080	---	10.5	---
0.085	---	10.8	---
0.090	---	11.2	---
0.095	---	11.5	---
0.100	---	11.6	---
0.105	---	12.0	---

TABLE D.7. SHEAR STRESS DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: INTERFACE
LAYER NO. : II, 29-32 FEET

Displacement (in.)	Stress (psi)		
	H-2-32	H-5-26	Average
0.000	0	0	0
0.002	3.7	14.0	8.9
0.004	4.1	14.3	9.2
0.006	4.5	14.6	9.6
0.008	4.8	15.0	9.9
0.010	4.9	15.2	10.1
0.015	5.2	15.6	10.4
0.020	5.7	15.7	10.7
0.025	6.4	15.7	11.1
0.030	7.0	15.7	11.4
0.035	7.2	----	----
0.040	7.7	----	----
0.045	7.8	----	----
0.050	8.6	----	----
0.055	9.1	----	----
0.060	9.1	----	----
0.065	9.2	----	----
0.070	9.2	----	----
0.075	9.2	----	----

TABLE D.8. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/4 INCH FROM INTERFACE
LAYER NO.: II, 29-32 FEET

Displacement (in.)	Stress (psi)		
	H-2-32	H-5-26	Average
0.000	0	0	0
0.002	1.4	----	----
0.004	1.8	----	----
0.006	2.4	----	----
0.008	3.3	----	----
0.010	3.8	----	----
0.015	4.2	14.0	9.1
0.020	4.6	14.4	9.5
0.025	4.8	15.2	10.0
0.030	5.5	15.8	10.7
0.035	6.2	16.3	11.3
0.040	6.7	16.6	11.7
0.045	7.1	16.8	12.0
0.050	8.0	17.3	12.7
0.055	8.6	17.4	13.0
0.060	8.6	17.7	13.2
0.065	8.7	17.9	13.3
0.070	8.7	18.0	13.4
0.075	8.7	18.1	13.4
0.080	---	18.1	----

TABLE D.9. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 3/8 INCH FROM INTERFACE
LAYER NO. : II, 29-32 FEET

Displacement (in.)	Stress (psi)		
	H-2-32	H-5-26	Average
0.000	0	0	0
0.002	2.2	13.3	7.8
0.004	2.4	----	----
0.006	2.9	----	----
0.008	3.5	----	----
0.010	3.7	----	----
0.015	4.2	----	----
0.020	5.0	----	----
0.025	5.7	12.7	9.2
0.030	6.8	12.9	9.9
0.035	7.4	13.1	10.3
0.040	7.9	13.3	10.6
0.045	8.1	13.4	10.8
0.050	8.1	13.5	10.8
0.055	8.2	13.6	10.9
0.060	8.3	14.0	11.2
0.065	8.3	14.1	11.2
0.070	8.3	14.2	11.3
0.075	---	14.3	----
0.080	---	14.3	----
0.085	---	14.4	----
0.090	---	14.5	----
0.095	---	14.6	----
0.100	---	14.7	----
0.105	---	14.7	----

TABLE D.10. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/2 INCH FROM INTERFACE
LAYER NO. : II, 29-32 FEET

Displacement (in.)	Stress (psi)	
	H-2-32	Average
0.000	0	0
0.002	2.4	2.4
0.004	2.7	2.7
0.006	3.0	3.0
0.008	3.6	3.6
0.010	3.8	3.8
0.015	4.5	4.5
0.020	4.7	4.7
0.025	5.0	5.0
0.030	5.4	5.4
0.035	5.5	5.5
0.040	5.6	5.6
0.045	6.1	6.1
0.050	6.5	6.5
0.055	7.0	7.0
0.060	7.2	7.2
0.065	7.8	7.8
0.070	8.1	8.1
0.075	8.1	8.1
0.080	8.1	8.1
0.085	8.1	8.1

TABLE D.11. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: PLAIN SOIL
LAYER NO. : III, 32-42 FEET

Displacement (in.)	Stress (psi)			
	H-2-38	H-2-39	H-2-40	Average
0.000	0	0	0	0
0.002	15.8	6.1	7.3	9.7
0.004	16.1	8.0	10.2	11.4
0.006	16.4	9.8	11.7	12.6
0.008	16.7	11.2	13.4	13.8
0.010	16.9	12.0	14.5	14.5
0.015	17.4	13.8	15.9	15.7
0.020	17.9	15.2	16.4	16.5
0.025	18.9	16.0	16.8	17.2
0.030	19.6	16.3	17.2	17.7
0.035	20.4	16.6	17.6	18.2
0.040	21.1	16.8	18.0	18.6
0.045	21.7	17.1	18.4	19.1
0.050	22.2	17.3	18.9	19.5
0.055	22.8	17.6	18.4	19.6
0.060	23.4	17.5	19.1	20.0
0.065	23.7	----	19.3	----
0.070	23.9	----	19.6	----
0.075	24.1	----	19.8	----
0.080	24.2	----	19.9	----
0.085	24.5	----	20.0	----
0.090	24.5	----	20.0	----
0.095	24.5	----	20.0	----
0.100	24.5	----	----	----

TABLE D.12. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: INTERFACE
LAYER NO. : III, 32-42 FEET

Displacement (in.)	Stress (psi)			
	H-2-38	H-2-39	H-2-40	Average
0.000	0	0	0	0
0.002	21.1	14.9	17.4	17.8
0.004	24.5	15.8	19.4	19.9
0.006	26.2	17.4	20.0	21.2
0.008	26.2	18.6	20.4	21.7
0.010	29.6	20.6	20.9	23.7
0.015	30.2	21.8	21.7	24.6
0.020	29.4	22.2	21.9	24.5
0.025	28.9	22.3	22.2	24.5
0.030	26.2	21.7	22.2	23.4
0.035	----	----	22.5	----
0.040	----	----	22.8	----
0.045	----	----	22.8	----
0.050	----	----	22.7	----
0.055	----	----	22.8	----
0.060	----	----	22.8	----

TABLE D.13. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/8 INCH FROM INTERFACE
LAYER NO. : III, 32-42 FEET

Displacement (in.)	Stress (psi)		
	H-2-38	H-2-40	Average
0.000	0	0	0
0.002	11.5	15.3	13.4
0.004	15.3	16.3	15.8
0.006	16.4	16.6	16.5
0.008	17.2	17.0	17.1
0.010	17.8	17.8	17.8
0.015	20.7	17.8	19.3
0.020	23.3	18.4	20.9
0.025	24.6	18.9	21.8
0.030	26.0	19.5	22.8
0.035	27.0	19.9	23.5
0.040	27.2	20.2	23.7
0.045	27.4	20.8	24.1
0.050	27.2	21.1	24.2
0.055	27.0	21.3	24.2
0.060	26.9	21.6	24.3
0.065	26.8	21.6	24.2

TABLE D.14. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/4 INCH FROM INTERFACE
LAYER NO.: III, 32-42 FEET

Displacement (in.)	Stress (psi)			
	H-2-38	H-2-39	H-2-40	Average
0.000	0	0	0	0
0.002	13.8	11.6	12.3	12.6
0.004	15.4	12.3	14.0	13.9
0.006	16.1	13.4	16.0	15.2
0.008	16.5	14.0	16.5	15.7
0.010	17.0	14.7	16.8	16.2
0.015	17.5	16.1	17.5	17.0
0.020	19.4	16.6	18.3	18.1
0.025	21.7	17.2	19.2	19.4
0.030	22.2	17.4	20.2	19.9
0.035	22.1	17.4	20.9	20.1
0.040	22.2	17.5	21.5	20.4
0.045	22.4	17.5	21.7	20.5
0.050	22.5	17.5	22.2	20.7
0.055	22.7	----	22.6	----
0.060	22.6	----	22.4	----
0.065	22.6	----	----	----
0.070	22.6	----	----	----

TABLE D.15. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 3/8 INCH FROM INTERFACE
LAYER NO. : III, 32-42 FEET

Displacement (in.)	Stress (psi)			
	H-2-38	H-2-39	H-2-40	Average
0.000	0	0	0	0
0.002	13.2	13.4	11.7	12.8
0.004	15.9	14.7	15.1	15.2
0.006	16.6	15.0	16.2	15.9
0.008	17.0	15.2	16.6	16.3
0.010	17.3	17.4	17.0	17.2
0.015	18.1	19.4	17.6	18.4
0.020	18.9	22.0	18.0	19.6
0.025	19.2	23.4	18.7	20.4
0.030	19.5	23.6	19.3	20.8
0.035	20.0	23.5	20.0	21.2
0.040	20.6	----	20.3	----
0.045	21.0	----	20.6	----
0.050	21.5	----	20.8	----
0.055	22.0	----	21.1	----
0.060	22.4	----	21.1	----
0.065	23.0	----	----	----
0.070	23.4	----	----	----
0.075	23.6	----	----	----
0.080	23.8	----	----	----
0.085	24.2	----	----	----
0.090	24.5	----	----	----
0.095	24.7	----	----	----
0.100	25.1	----	----	----
0.105	25.3	----	----	----
0.110	25.4	----	----	----

TABLE D.16. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/2 INCH FROM INTERFACE
LAYER NO. : III, 32-42 FEET

Displacement (in.)	Stress (psi)	
	H-2-39	Average
0.000	0	0
0.002	16.4	16.4
0.004	16.6	16.6
0.006	16.7	16.7
0.008	16.9	16.9
0.010	17.6	17.6
0.015	20.2	20.2
0.020	20.8	20.8
0.025	20.9	20.9
0.030	22.2	22.2
0.035	22.4	22.4
0.040	22.5	22.5
0.045	22.4	22.4
0.050	22.4	22.4
0.055	22.2	22.2

TABLE D.17. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: PLAIN SOIL
LAYER NO. : IV, 42-48 FEET

Displacement (in.)	Stress (psi)				
	H-5-39	H-5-40	H-5-42	H-5-43	Average
0.000	0	0	0	0	0
0.002	12.6	12.4	9.6	9.4	11.0
0.004	14.4	13.6	13.3	11.1	13.1
0.006	15.5	14.7	15.2	12.3	14.4
0.008	15.9	15.5	15.9	13.4	15.2
0.010	16.1	15.7	16.4	13.9	15.5
0.015	16.6	16.3	17.0	14.6	16.1
0.020	17.0	16.7	17.7	15.3	16.7
0.025	17.3	17.1	18.2	16.1	17.2
0.030	17.6	17.6	19.2	16.5	17.7
0.035	17.7	18.0	19.5	16.9	18.0
0.040	18.1	18.6	20.1	17.3	18.5
0.045	18.3	19.2	20.3	17.6	18.9
0.050	18.6	20.0	20.6	18.2	19.4
0.055	19.0	20.4	20.9	19.1	19.9
0.060	19.3	20.8	21.0	19.5	20.2
0.065	19.4	21.3	21.1	20.0	20.5
0.070	19.6	21.6	21.5	20.6	20.8
0.075	19.8	21.7	21.8	20.9	21.1
0.080	19.8	22.0	22.1	21.1	21.3
0.085	19.9	22.1	22.4	21.5	21.5
0.090	20.0	22.4	22.7	21.7	21.7
0.095	20.0	22.6	22.9	21.9	21.9
0.100	20.1	22.8	23.4	22.7	22.3
0.105	20.2	22.9	23.8	23.0	22.5
0.110	20.2	23.0	23.9	23.6	22.7
0.115	20.2	23.2	24.1	23.9	22.9
0.120	20.2	23.4	24.2	24.3	23.0
0.125	20.2	23.5	24.5	24.7	23.2
0.130	20.2	23.6	24.6	25.1	23.4
0.135	20.2	23.6	24.8	25.4	23.5
0.140	20.2	23.6	25.2	25.6	23.7
0.145	20.3	23.6	25.4	25.9	23.8
0.150	20.4	----	25.6	26.0	----
0.155	20.6	----	25.7	26.1	----
0.160	20.7	----	25.9	26.2	----
0.165	----	----	26.2	26.4	----
0.170	----	----	26.3	----	----
0.175	----	----	26.3	----	----

TABLE D.18. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: INTERFACE
LAYER NO. : IV, 42-48 FEET

Displacement (in.)	Stress (psi)			
	H-5-40	H-5-42	H-5-43	Average
0.000	0	0	0	0
0.002	16.3	12.3	14.6	14.4
0.004	16.4	14.2	14.8	15.1
0.006	16.5	15.4	15.0	15.6
0.008	16.4	15.9	14.8	15.7
0.010	16.3	16.1	----	----
0.015	16.2	16.2	----	----
0.020	16.1	16.1	----	----
0.025	16.0	16.1	----	----
0.030	15.9	16.0	----	----
0.035	15.8	15.9	----	----
0.040	15.7	15.8	----	----
0.045	15.6	15.7	----	----
0.050	15.5	15.7	----	----
0.055	----	15.6	----	----

TABLE D.19. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/8 INCH FROM INTERFACE
LAYER NO. : IV, 42-48 FEET

Displacement (in.)	Stress (psi)				
	H-5-39	H-5-40	H-5-42	H-5-43	Average
0.000	0	0	0	0	0
0.002	5.1	10.7	16.1	8.7	10.2
0.004	5.4	11.0	16.4	11.7	11.1
0.006	5.7	12.5	13.9	13.6	11.4
0.008	6.5	14.1	14.0	14.1	12.2
0.010	7.1	15.6	13.9	14.1	12.7
0.015	9.5	20.6	13.8	14.3	14.6
0.020	13.3	24.6	13.7	14.5	16.5
0.025	16.0	26.0	13.6	14.5	17.5
0.030	17.0	27.3	13.5	14.4	18.1
0.035	18.0	28.3	----	14.3	----
0.040	19.0	29.0	----	14.1	----
0.045	----	29.1	----	----	----
0.050	----	29.0	----	----	----
0.055	----	28.8	----	----	----

TABLE D.20. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 1/4 INCH FROM INTERFACE
LAYER NO. : IV, 42-48 FEET

Displacement (in.)	Stress (psi)				
	H-5-39	H-5-40	H-5-42	H-5-43	Average
0.000	0	0	0	0	0
0.002	5.6	6.3	12.5	5.7	7.5
0.004	6.2	6.7	----	----	----
0.006	6.7	7.5	14.3	----	----
0.008	7.5	8.9	17.7	----	----
0.010	8.2	10.1	21.7	----	----
0.015	9.9	10.4	25.2	----	----
0.020	11.7	11.0	27.1	12.5	15.6
0.025	13.8	11.4	28.8	16.1	17.5
0.030	15.6	12.0	29.9	19.3	19.2
0.035	16.1	12.4	30.0	21.5	20.0
0.040	16.8	12.9	30.0	22.8	20.6
0.045	17.2	13.3	30.4	23.9	21.2
0.050	17.6	13.5	30.6	24.7	21.6
0.055	17.9	13.8	30.6	25.2	21.9
0.060	18.3	14.2	----	25.5	----
0.065	18.6	14.3	----	25.6	----
0.070	19.1	14.5	----	25.6	----
0.075	19.2	14.7	----	25.5	----
0.080	19.2	15.0	----	25.5	----
0.085	19.3	15.2	----	----	----
0.090	19.3	15.4	----	----	----
0.095	19.3	15.6	----	----	----
0.100	19.3	15.6	----	----	----
0.105	19.4	15.6	----	----	----
0.110	19.4	15.6	----	----	----
0.115	19.4	15.6	----	----	----
0.120	19.6	15.6	----	----	----
0.125	19.5	15.6	----	----	----
0.130	19.6	15.6	----	----	----
0.135	19.6	15.6	----	----	----
0.140	19.6	15.6	----	----	----

TABLE D.21. SHEAR STRESS-DISPLACEMENT DATA FOR MORTAR MIGRATION STUDY
TYPE SHEAR: 3/8 INCH FROM INTERFACE
LAYER NO. : IV, 42-48 FEET

Displacement (in.)	Stress (psi)	
	H-5-39	Average
0.000	0	0
0.002	----	----
0.004	17.1	17.1
0.006	17.9	17.9
0.008	18.7	18.7
0.010	19.4	19.4
0.015	20.7	20.7
0.020	21.7	21.7
0.025	22.5	22.5
0.030	22.7	22.7
0.035	23.0	23.0
0.040	23.3	23.3
0.045	23.4	23.4
0.050	23.4	23.4
0.055	23.4	23.4
0.060	23.5	23.5
0.065	23.5	23.5
0.070	23.5	23.5
0.075	23.5	23.5
0.080	23.5	23.5
0.085	23.5	23.5
0.090	23.3	23.3
0.095	23.3	23.3
0.100	23.2	23.2
0.105	23.0	23.0
0.110	22.9	22.9
0.115	22.7	22.7

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APPENDIX E

VOID RATIO VERSUS

EFFECTIVE PRESSURE CURVES

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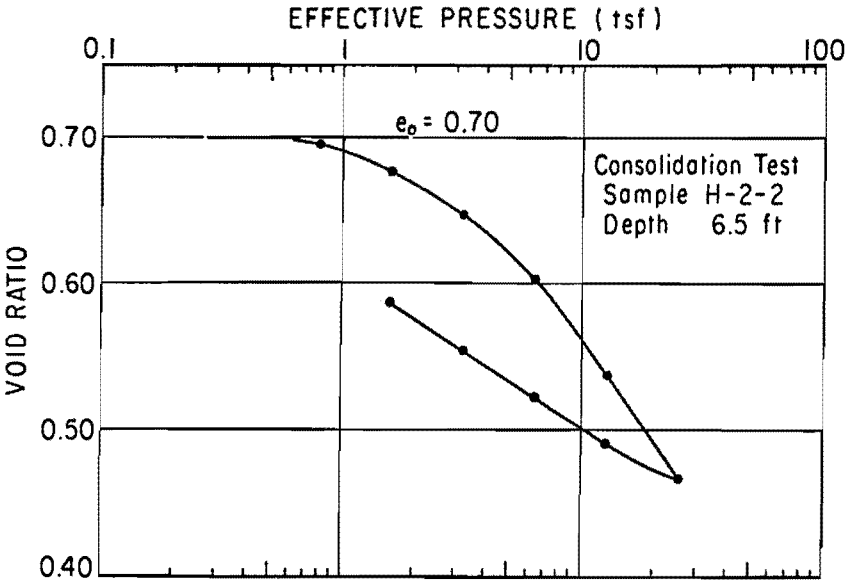

Fig. E.1. Void Ratio Versus Effective Pressure, Sample H-2-2

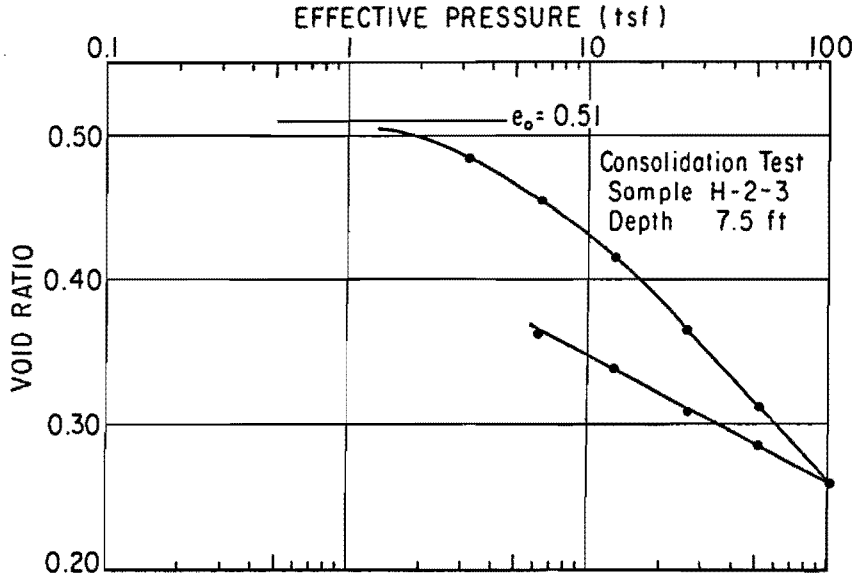

Fig. E.2. Void Ratio Versus Effective Pressure, Sample H-2-3

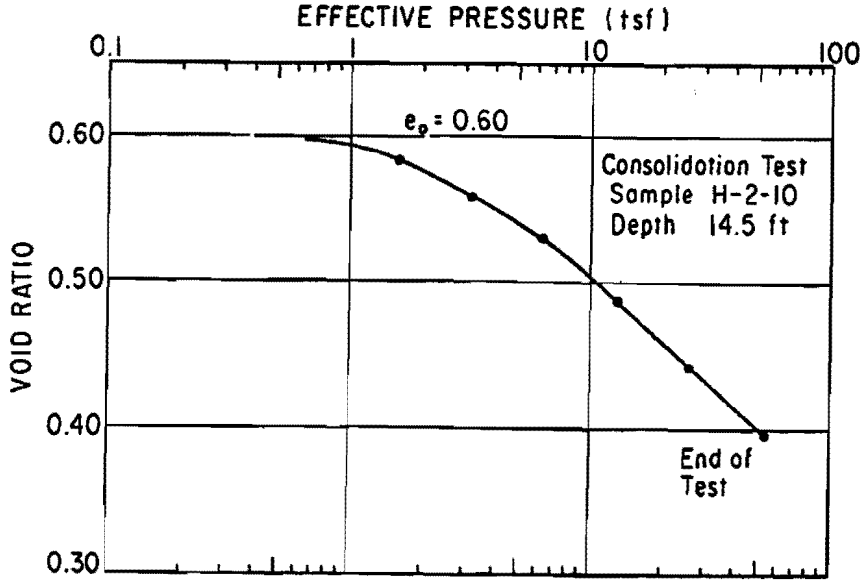

Fig. E.3. Void Ratio Versus Effective Pressure, Sample H-2-10

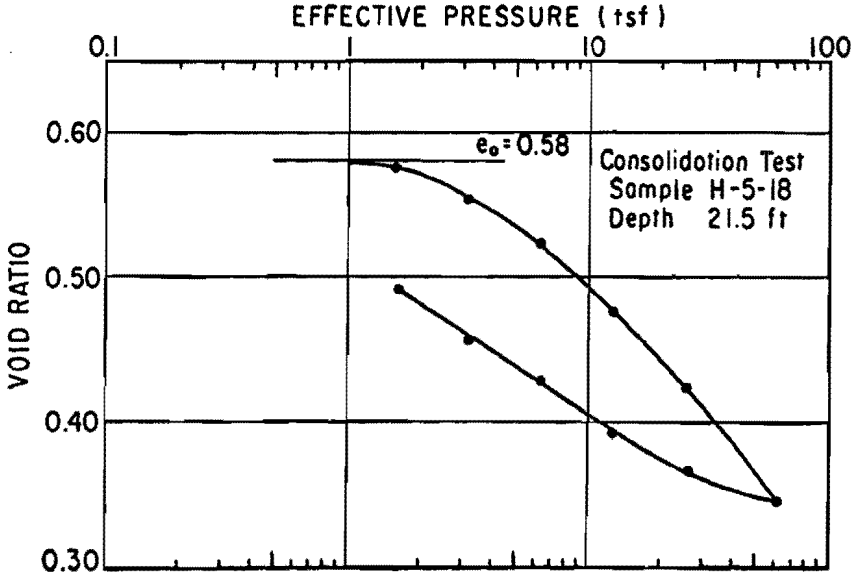

Fig. E.4. Void Ratio Versus Effective Pressure, Sample H-5-18

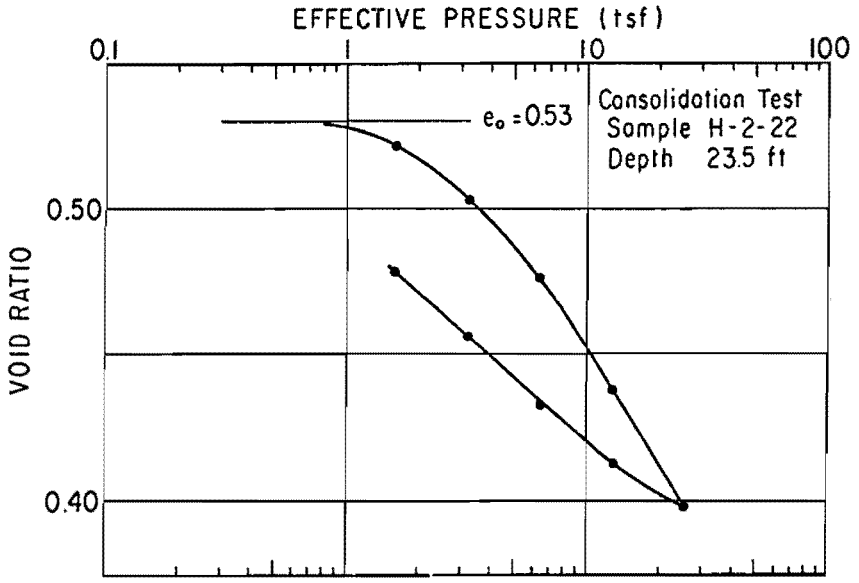

Fig. E.5. Void Ratio Versus Effective Pressure, Sample H-2-22

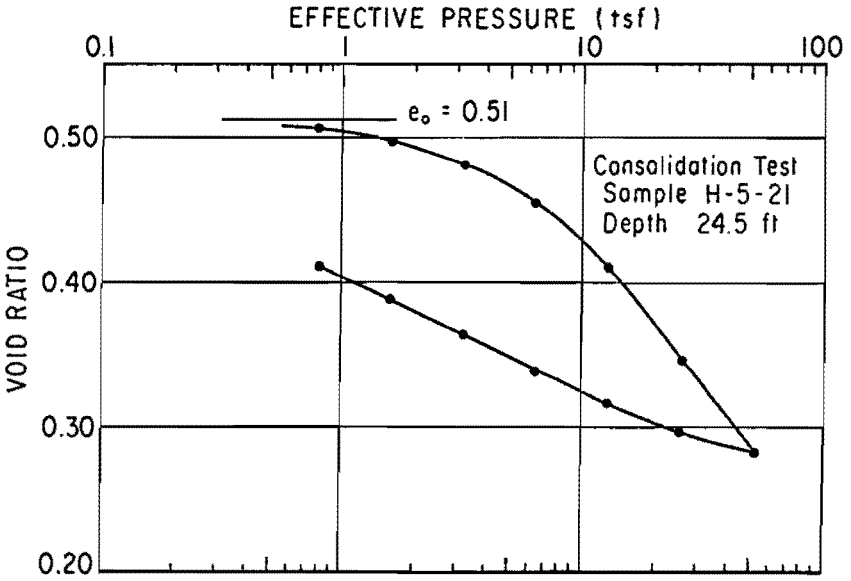

Fig. E.6. Void Ratio Versus Effective Pressure, Sample H-5-21

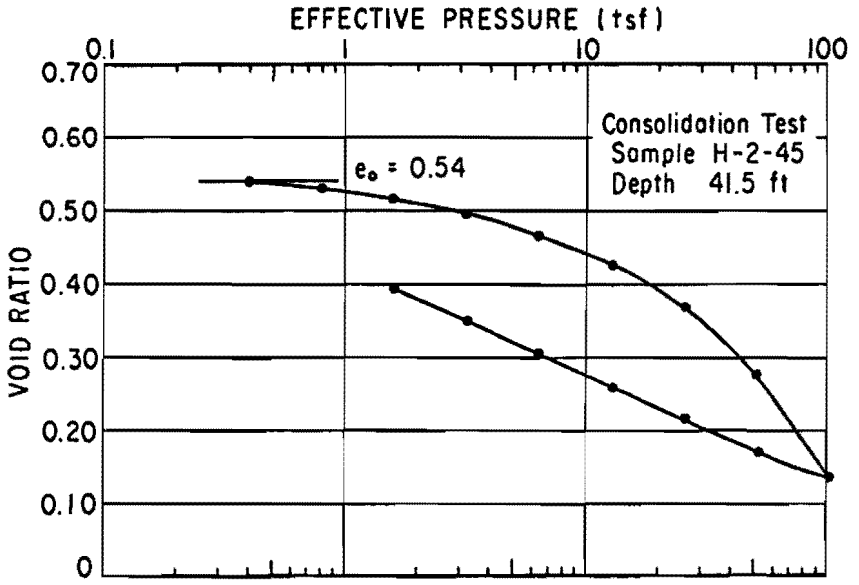

Fig. E.7. Void Ratio Versus Effective Pressure, Sample H-2-45

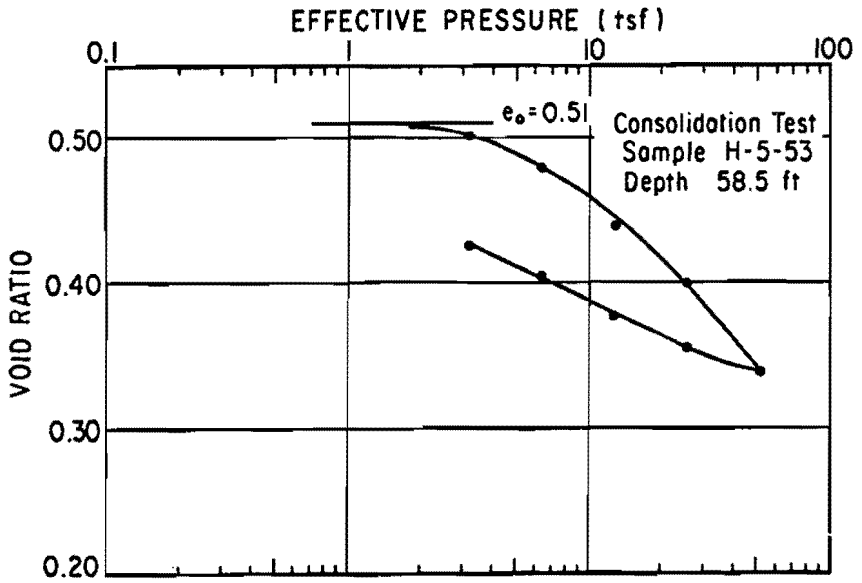

Fig. E.8. Void Ratio Versus Effective Pressure, Sample H-5-53

APPENDIX F

FIELD NOTES

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FIELD NOTES--SHAFT 1

INSTRUMENTATION AND INSTALLATION

Date/Time	Remarks
6 June 1968	Majority of gages installed on cage in van Layne-Texas yard. Very cramped conditions. Top coupling of TT11 slightly loose.
7 June 1968	Gages marked and logged. Instrumentation completed, except for screwing on telltale feet. Will be done at time of installation. All embedment gage junction boxes purged with dry nitrogen. Each system then sealed. Manifold for Mustran gages could not be properly hooked up due to improperly fitting feed-throughs. Must leave Mustran system unsealed until next trip down. Readings taken.
18 June 1968	Completed Mustran manifold. System operational. Readings taken. Attempt will be made to install shaft tomorrow. Weather has been very showery past several days. Staked out final location of anchors and test Shaft No. 1 at SH225 site.
19 June 1968	Raining hard. Installation postponed.
27 June 1968	Test Shaft No. 1 to be installed today.
0800	Weather: Cool and clear. Heavy showers past two weeks in Houston. Site very wet; had difficulty getting large wheeled vehicles onto site.
0830	Van arrived with cage. TT23 had loose joint on inner rod. Joint repaired as well as possible.
0955	Hole started (with truck-mounted rig).
1030	Hole completed.
1045	Seat for BHC completed.
1100	Tried to hoist BHC down hole. Hole too small. Cell stuck five feet down. Tried to drop in under own weight. Would not go. May have damaged seal along side. Removed cell.
1110	Calipered hole. Diameter about 29".

1115	Installed side-cutter on auger. Carefully reamed out hole to 30"+. Hole very lightly rifled.
1200	BHC finally in and seated OK. Anagnos lowered down hole to inspect; OK. About one inch of water in bottom of hole. Has presumably seeped in from below. Sides of hole appear dry.
1245	Cage set in hole. Pressure applied to Mustran and BHC. One inch water over top of BHC. Noticed bubbling around BHC. Leaking around sides. Readings taken.
1345	Concrete pour started. Used rubber elephant trunk tremie. Horton and Horton Company readymix concrete supplier. No vibration except for working cage back and forth. Controlled slump at about 5 1/2". Took cylinder about every three to four feet. Good quality concrete. Good distribution. No retarder used.
1420	Gloetzl cell placed.
1425	Concrete pour finished.
1430	Noticed leaks in manifold. Pressure not holding. Attempted to repair leaks.
1515	Leaks still occurring at 10 psi. Noticed telltales appeared slightly off center. Sonotube Form probably not centered exactly. Also, cage may not have ended up perfectly vertical.
1600	Lunch break! Nitrogen leaking faster now.
1630	Nitrogen replaced with oxygen, since nitrogen bottle nearly empty. Oxygen only readily available pressurized gas. Attempt made to secure another bottle of oil pumped dry nitrogen. No luck. Supply house closed. Will leave oxygen on system all night.
1800-2000	Readings taken. Gages look good. Three Mustran gages and one embedment gage showing some evidence of moisture (slightly reduced resistance to ground). Purged Mustrans. Leakage to ground increased to high value.

28 June 1968

0845	Arrived site. Oxygen bottle empty. New bottle hooked up. Gages read.

0900	Blew out BHC. A "few teaspoons" of water came up. Decided, since leak was that bad, that BHC should come off pressure system, filled with non-detergent transformer oil, and sealed to keep moisture off contacts and gages.
1100	Got new bottle of dry nitrogen.
1200	Layne-Texas provided pump to pump transformer oil into BHC. Cell filled quickly. No more water expelled.
1215	Oil level in inlet tube had dropped. Pumped more oil (about one quart) into BHC. Level stabilized.
1230	Thorough check for leaks in manifold. Several found around unions. Attempted to fix. Reduced rate of leakage, but did not entirely stop. Manifold may have to be replaced.
1400	Readings taken. Gages generally looked good.
1515	Left for Austin.
3 July 1968	Replaced manifold with new, simpler manifold built by Walter Barker. Pressure now being applied to Mustran through original return tubes. No leaks. BHC flushed. No detectable leakage. Recovered return oil and replaced with new oil. No water expelled. All Mustran gages thoroughly purged. Readings taken.

FIELD NOTES--SHAFT 2

INSTRUMENTATION AND INSTALLATION

Date/Time	Remarks
5 Dec. 1968	Placed all gages and telltales on cage in Texas Highway Department (T.H.D.) District 12 Warehouse. Gage locations logged, and Mustran system pressurized. Small leak in "octopus" manifold. Not serious.
10 Dec. 1968	Read gages.
11 Dec. 1968	Installed thermocouples. Stopped leaks in manifold with sealing compound around threads of several brass nipples. Read gages.
30 Dec. 1968	Attempt will be made to install Shaft 2 tomorrow. Presently raining, but warm. Read gages. Cage still in T.H.D. warehouse.
31 Dec. 1968	No go today. Still raining. Will try again in about one week.
6 Jan. 1969	Test Shaft No. 2 to be installed today.
0800	Cage picked up by contractor (Griffin Foundation Drilling Corp.). Loaded on flatbed. Strapped down too tight on top end, causing cage to be slightly egg-shaped for top 6 - 7 feet.
0930	Cage arrived site. Weather: clear and cool, temperature in 50's. Ground damp but firm. No rain past few days.
1110	Borehole spudded in to 4 feet. Used large truck-mounted Williams-type rig.
1115	Stopped for lunch in order to have continuous drilling for rest of operation.
1225	Restarted drilling. Hole dry. Typical soil profile. Good straight and smooth hole below 2 feet. Slightly wobbled out above 2 feet.
1240	Completed straight borehole.
1245	Belling started.

1430	Belling complete. Base "cleaned out" with belling tool.
1440	Vijayvergiya lowered down hole to measure and inspect. Bell well formed. A few crumbs remaining on bottom, but OK to pour. Hole still completely dry.
1445	Cage set in hole. Pressure off manifold during pour.
1505	Concrete pour started. Concrete contractor was Horton and Horton. Truck had been waiting at site for nearly an hour. Used home-made canvas tremie. Concrete vibrated. Slump maintained at 6". Hit gage M-18-U with vibrator. Cylinders taken.
1545	Concrete placement completed.
1600-1645	Gages read. M-18-U sluggish. Rest OK.
1705	Pressure on. Holding steady at 7 psi. Looks like no leaks this time.
1715	Lower level of gages flushed.
7 Jan. 1969	Pressure still holding steady on manifold. Read gages. M-18-U still sluggish. Looks like possibility of mechanical damage when gage hit by vibrator. Other gages OK.

FIELD NOTES--SHAFT 3

INSTRUMENTATION AND INSTALLATION

Date/Time	Remarks
7 July 1969	Arrived site. Cages for Shafts 3 and 4 on site. Has been very dry in Houston past month. Grass turning brown on site. One-inch sun cracks visible in ground around site. Proceded to install gages on cages at site. Weather: Hot, dry, breezy. Read gages. All OK. Will attempt to install Shaft 3 tomorrow.
8 July 1969	Test Shaft No. 3 to be installed today. Drilling contractor: Farmer Foundation Co. Concrete supplier: Parker Bros. Weather: Hot, dry, windy. Temperature: 90° - 95°.
1045	Hole opened. Truck-mounted rig.
1115	Boring completed at 24'. Hole dry. Very smooth. Lightly rifled by auger. Cylindrical. No noticeable taper.
1130	Cage set in hole. Fairly snug fit for styrofoam pad. No crushing of pad occurred.
1150	Concrete pour started. Standard steel tremie used. Pozzolith admixture used as retarder. Short wait for trucks. Good 6" slump maintained. Six cylinders taken at regular intervals. No vibration.
1230	Concrete placement completed. Pressure applied to Mustran system. No leaks.
1300	Concrete beginning to set up on top of shaft.
1315	Readings taken, gages OK.
1830-2200	Gages monitored as setup occurring.
9 July 1969	Gages read several times. All OK. Pressure holding OK. Site still very dry.
17 July 1969	Rained yesterday for first time in more than month. Siphoned acetone down tube to dissolve styrofoam. Three gallons technical grade acetone used. Read gages before and after dissolving styrofoam. Appears everything worked OK.

FIELD NOTES--SHAFT 4

INSTRUMENTATION AND INSTALLATION

Date/Time	Remarks
7 July 1969	Arrived site. Instrumented Shaft 4 cage concurrent with Shaft 3 cage. See Shaft 3 notes for weather, etc. Will attempt to install Shaft 4 tomorrow following installation of Shaft 3.
8 July 1969	
1045-1230	Installed Test Shaft No. 3. Weather: Hot, dry, windy (90° - 95°). Started hole for Test Shaft No. 4. Used same truck-mounted rig as used for Shaft No. 3. Kelly can only be extended to 36'. Special adapter used for drilling below 36'. Hole will be processed.
1410	Encountered the water-bearing silt at 29'. Bentonite (one bag) dropped in immediately. Started filling hole with water and mixing in soil and bentonite with auger.
1420	Completed mudding operation. Began drilling slowly through silt.
1445	Contractor ran out of water. Hole not full of mud. Mud surface 12' below top. Hole at 36'±. Drilling stopped while contractor getting more water in truck.
1500	Noticed slight sloughing from borehole walls at surface of mud.
1540	Contractor arrived with more water. Mud surface brought up to near ground level.
1545	Started drilling again.
1550	Not making a hole. Soil coming up on auger has few cutting marks. Probably material which sloughed in from sides during wait. Drilling continued very slowly.
1635	Still not making a hole. More sloughing detected from 12' level.
1705	Hole abandoned. Excessive sloughing from sides of borehole. Will try again tomorrow 10' grid south of S.E. Reaction shaft.

9 July 1969		Test Shaft No. 4 to be installed (second try). Same drilling contractor and concrete supplier as for Shaft 3. Still hot and dry. Weather same as 8 July 1969
	0840	Opened new hole 10 grid South of S.E. Reaction shaft.
	0903	Encountered water-bearing silt at 29'. Water bubbling in from bottom. Sides dry. Hole smooth to 29'. No opportunity to caliper. Deep cutter blade marks or collar at 16'.
	0905	Bentonite introduced, and hole filled with water. Mud made up from previously extracted soil, bentonite and water.
	0920	Completed mixing mud. Drilling started again.
	0955	Encountered good stiff plastic clay at 40'.
	1005	Set casing at 40'. Bailed out mud inside casing. A little erosion (1/2" pockets) in borehole wall due to churning water near top of hole. Top of hole oversized by about 4 - 5 ".
	1045	Bailing completed
	1140	Hole completed by augering last 5' in dry. Bottom of hole underneath casing appears dry (as viewed from topside).
	1210	A little water visible in pilot hole. No more than a pint. Plug of concrete dropped in directly out of readymix truck chute. Plug well spread out and about 3" thick.
	1215	Cage set in hole. Seated cage on concrete plug by up-and-down motion. Concrete pour started immediately. Slump controlled at 6". Pozzolith used as retarder. No vibration. Standard metal tremie used. Noticed that the 1/2" pockets near the top had developed into a small collar about 2 - 4" deep by one foot long from 3 - 4'. This is only evidence of any "belling" or "collaring" in the hole, except small enlargement at 16'.
	1235	Concrete about 15' below ground surface. First readymix truck empty. Started pouring from second truck.

1244	Stopped pour temporarily to pull casing. Concrete level just below ground surface. Extracted casing slowly until tip of casing had been pulled up about 12'. No evidence of reinforcement riding up.
1300	Casing filled to top from bucket to provide fluid head to force mud out from annular space between casing and sidewall.
1315	Casing fully extracted. Smooth outflow of mud started only when casing was a few feet from being fully out. Flow of mud followed by good quality fluid concrete.
1340	Difficulty in detaching manifold from cage. Had to release concrete truck. Called for third truck to finish off shaft above ground. Top level of gages still partially exposed.
1400	Manifold finally removed and pressure applied to gages. Top form set.
1440	Readymix truck arrived to complete shaft. Older concrete at surface beginning to stiffen somewhat.
1450	Top of shaft poured. Form split. Slightly elliptical.
1530	Gages read. All look OK.
1630	System repressurized to 15 psi. No leaks.

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APPENDIX G

CONCRETE TEST RESULTS

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CONCRETE TESTS*

TEST SHAFT NO. 1

Concrete Supplier: Horton and Horton

Testing Laboratory: Shilstone Testing Laboratory, Inc.

Concrete Description: Texas Highway Department Class C concrete for drilled shafts, 6 sk./yd. cement. Water-cement ratio 6.5 gal./sk. Slump = 5 1/2 inches.

Cylinder	Depth in Shaft (feet)	28-Day Compressive Strength (psi)
A-18	18	4,990
A-14	14	5,250
A-10	10	5,180
A-10	10	5,110
A- 6	6	5,320
A- 6	6	5,410
A- 5	5	5,020
A- 5	5	4,740
A- 0	0	3,960

*All test concrete for this and other shafts cured in forms on site for 24 hours, then moist-cured in Houston Urban Expressways Division Laboratory for the remaining time before testing.

CONCRETE TESTS

TEST SHAFT NO. 2

Concrete Supplier: Horton and Horton

Testing Laboratory: Shilstone Testing Laboratory, Inc.

Concrete Description: Texas Highway Department Class C concrete for drilled shafts, 6 sk./yd. cement. Water-cement ratio 6.5 gal./sk. Slump = 6 inches.

Cylinder*	Secant Modulus of Elasticity at 1500 Psi** (psi)	Compressive Strength (psi)
4B	5.9×10^6	4,780 (28-day)
5B	6.6×10^6	4,950 (28-day)
6B	5.9×10^6	4,860 (28-day)
4S	5.9×10^6	5,360 (28-day)
5S	5.3×10^6	5,450 (28-day)
6S	5.9×10^6	5,380 (28-day)
1B	---	3,430 (7-day)
2B	---	3,540 (7-day)
3B	---	3,710 (7-day)
1S	---	4,010 (7-day)
2S	---	3,710 (7-day)
3S	---	4,030 (7-day)
Average	5.9×10^6 (5.7×10^6 in stem)	

*Samples marked "B" taken from bell. Samples marked "S" taken from stem.

**Stress-strain curve linear to 1500 psi.

CONCRETE TESTS

TEST SHAFT NO. 3

Concrete Supplier: Parker Brothers

Testing Laboratory: Shilstone Testing Laboratory, Inc.

Concrete Description: Texas Highway Department Class C concrete for drilled shafts, 6 sk./yd. cement. Water-cement ratio 6.5 gal./sk. Slump = 6 inches. Pozzolith admixture.

Cylinder*	Secant Modulus of Elasticity (psi)	
	at 1000 psi	at 1500 psi
5-A	6.2×10^6	5.3×10^6
5-B	6.5×10^6	5.6×10^6
5-C	7.0×10^6	6.2×10^6
5-D	5.6×10^6	5.3×10^6
5-E	6.5×10^6	6.2×10^6
5-F	6.5×10^6	6.2×10^6
Average	6.4×10^6	5.8×10^6
No ultimate strengths reported.		

*Samples taken at regular intervals from bottom of shaft (5-A) to top of shaft (5-F).

CONCRETE TESTS

TEST SHAFT NO. 4

Concrete Supplier: Parker Brothers

Testing Laboratory: Shilstone Testing Laboratory, Inc.

Concrete Description: Texas Highway Department Class C concrete for drilled shafts, 6 sk./yd. cement. Water-cement ratio 6.5 gal./sk. Slump = 6 inches. Pozzolith admixture.

Cylinder*	Secant Modulus of Elasticity (psi)	
	at 1000 psi	at 1500 psi
6-A	5.1×10^6	4.9×10^6
6-B	5.8×10^6	5.5×10^6
6-C	5.0×10^6	4.8×10^6
6-D	5.6×10^6	4.9×10^6
6-E	5.3×10^6	4.9×10^6
6-F	5.5×10^6	4.5×10^6
Average	5.4×10^6	4.9×10^6
No ultimate strengths reported.		

*Samples taken at regular intervals from bottom of shaft (6-A) to top of shaft (6-F).

APPENDIX H

MUSTRAN CELL CALIBRATION DATA

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CALIBRATION CONSTANTS FOR MUSTRAN CELLS

Shaft 1: All gages Type 1
Precast in 4 1/4" X 4 1/4" X 11" concrete blocks before calibration. All gages had BLH Type FAET-25C-12S6 90° tee rosettes (G.F. = 2.02; Resistance = 120 ohms).

Mustran Cell*	Circuit Strain As Read on Strain Indicator** (gage factor = 2.0)	Circuit Output Voltage for 6 Volts Applied***
M- 0-1	100[1]	300[2]
M- 0-2	97	291
M-21-3	99	297
M-10-4	94	282
M-10-5	97	291
M-15-6	94	282
M-15-7	98	294
M-21-8	103	309

* Nomenclature: M indicates "Mustran;" first numeral is programed nominal depth of embedment; second numeral is gage number.

** These strain values are approximately 5.5 times the actual strain measured in the concrete blocks by embedment-type strain gages. They are also approximately 2.6 times the strain in the steel element at the point where the strain gages are bonded.

*** Computed from strain indicator readings.

1 Microinches/inch per kip applied load.

2 Microvolts per kip applied load.

CALIBRATION CONSTANTS FOR MUSTRAN CELLS (cont'd)

Shaft 2: All gages Type 2
All gages had BLH Type FAET-25C-12S6 90° tee rosettes (G.F. = 2.02; Resistance = 120 ohms).

Mustran Cell*	Circuit Output Voltage For 6 Volts Applied
M- 4- 1	1075[1]
M- 0- 2	1055
M- 0- 4	1055
M- 8- 5	1055
M- 0- 7	1060
M- 4- 8	1060
M- 4- 9	1060
M- 8-10	1050
M-11-11	1045
M-11-12	1090
M-14-14	1050
M-14-15	1070
M-14-16	1060
M-16-17	1050
M-16-18	1050
M-18-19	1050
M-16-21	1060
M- 8-22	1075
M-18-23	1050
M-18-24	1050
M-16- U	1050
M-11- U	1050
M-18- U	1050

*Nomenclature: M indicates "Mustran;" first numeral is nominal depth; second numeral is gage number; U indicates unnumbered gage.

[1]Microvolts per kip applied load.

Note: When installed, cells M-16-21, M-16- U, and M-18-24 were pressurized through jacketed cables. Others were pressurized through protective copper tubing.

CALIBRATION CONSTANTS FOR MUSTRAN CELLS (cont'd)

Shaft 3: All gages Type 1
All gages had BLH Type FAET-25C-12S6 90° tee rosettes (G.F. = 2.02; Resistance = 120 ohms).

Mustran Cell*	Circuit Output Voltage For 6 Volts Applied
M- 0- 1-N	3030[1]
M- 9- 2-N	3000
M- 6- 3-N	3000
M-12- 4-S	3000
M-21- 5-S	3020
M- 0- 6-S	2930
M- 3- 9-S	2930
M-15-10-S	2940
M- 0-11-W	3300
M-18-12-S	2980
M-15-14-N	3290
M- 0-15-E	3240
M-12-16-N	3200
M- 9-17-S	3200
M-23-18-M	----**
M- 6-19-S	3180
M-18-20-N	3210
M-21-22-N	3180
M- 3-24-N	3300
M-23-26-S	3200
M-23-27-N	3320

*Nomenclature: M indicates "Mustran;" first numeral is nominal depth, second numeral is gage number; suffix designates directional position in completed shaft.

**Not calibrated, continuity check only.

[1]Microvolts per kip applied load.

CALIBRATION CONSTANTS FOR MUSTRAN CELLS (cont'd)

Shaft 4: All gages Type 1
All gages except numbers 13, 21, 23, 51, 52, 53, 54, 55 had small lips. All gages numbered less than 30 had BLH Type FAET-25C-12S6 90° tee rosettes (G.F. = 2.02; Resistance = 120 ohms). All gages numbered 30 or greater had Micro-Measurements Type EA-06-250TF-120 90° tee rosettes (G.F. = 2.09; Resistance = 120 ohms).

Mustran Cell	Circuit Output Voltage for 6 Volts Applied	Mustran Cell	Circuit Output Voltage for 6 Volts Applied
M- 0-30-N	3060[1]	M-28-40-N	3000[1]
M- 0-31-S	3000	M-28-41-S	3060
M- 0-32-W	3050	M-32-46-N	3080
M- 0-34-E	3050	M-32-47-S	3020
M- 4-42-S	3140	M-36-13-N	3260
M- 4-43-N	3070	M-36-21-S	3320
M- 8-35-S	3100	M-40-48-N	3000
M- 8-33-N	3010	M-40-49-S	3020
M-12-45-S	3040	M-43- 8-N	2920
M-12-44-N	3050	M-43-23-S	3320
M-16-36-S	3030	M-45-51-NE	3080
M-16-37-N	3010	M-45-52-SE	3050
M-20-38-S	2970	M-45-53-SW	3010
M-20-39-N	3000	M-45-54-M	3090
M-24- 7-S	3070	M-45-55-NW	3040
M-24-50-N	3010		

*Nomenclature: M indicates "Mustran;" first numeral is nominal depth, second numeral is gage number.

[1]Microvolts per kip applied load.

APPENDIX I

CONVERSION FACTORS FOR MUSTRAN CELLS

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Mustran cell output can be read conveniently with either a strain indicator or a voltmeter. No-load readings given in Chapter X are presented in terms of circuit strain as read with a strain indicator, while the load test data were usually acquired with a digital voltmeter. Using the equation

$$\frac{\epsilon_{circuit}}{4} = \frac{E_o}{KV} \quad \text{(I.1)}$$

in which

E_o = circuit output in microvolts

K = gage factor (2.02 or 2.09)

V = applied voltage (6 volts)

$\epsilon_{circuit}$ = strain indicator reading in microinches per inch (full bridge),

output voltage (in microvolts) can be converted to strain indicator readings (in microinches per inch) by multiplying by 0.330 (gage factor of 2.02) or by 0.319 (gage factor of 2.09). Since the circuit strain is given by the relationship

$$\epsilon_{circuit} = 2(\epsilon_{1_{steel}} - \nu_{steel}\,\epsilon_{2_{steel}}) = 2.67\,\epsilon_{1_{steel}} \quad \text{(I.2)}$$

in which

$\epsilon_{1_{steel}}$ = strain in steel in logitudinal direction

$\epsilon_{2_{steel}}$ = strain in steel in transverse direction

ν_{steel} = Poisson's ratio of steel $\approx$ one-third,

the output voltage in microvolts can be converted to steel strain by combining Eqs. I.1 and I.2. The result is:

$$\epsilon_{steel} = \frac{E_o}{8.08} \quad \text{(gage factor = 2.02)} \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(I.3)}$$

$$\epsilon_{steel} = \frac{E_o}{8.38} \quad \text{(gage factor = 2.09)} \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(I.4)}$$

The relationship of Mustran circuit strain to concrete strain is not required for data reduction. Nevertheless, it is of interest to note that a chart can be constructed relating Mustran or embedment gage readings at the calibration level to the average concrete stress at that level, as shown in Fig. I.1. Assuming that the embedment gages correctly measure the concrete strain, the approximate strain corresponding to any Type 1 or Type 2 Mustran cell reading can be found as indicated in the figure. The embedment gages indicate a Young's modulus of 5.7×10^6 psi, which is quite close to that measured in cylinder tests. Since the relationships shown in Fig. I.1 are linear, the following conversion factors are valid for the SH225 tests:

Mustran cell output in microvolts per six volts applied (voltmeter) to concrete strain in microinches per inch:

Type 1 (except those precast): Multiply by 0.051

Type 1 (precast): Multiply by 0.062 (S1)

Type 2: Multiply by 0.106

Mustran cell output in microinches per inch (strain indicator) to concrete strain in microinches per inch:

Type 1 (except those precast): Multiply by 7.3

Type 1 (precast): Multiply by 5.5 (S1)

Type 2: Multiply by 3.1

It is seen that the as-cast Type 1 cells are slightly less than twice as sensitive as the as-cast Type 2 cells. The Type 1 cells were about three times as sensitive when loaded directly in the laboratory during calibration.

The validity of these conversion factors for use with Mustran cells in shafts of different diameters and with different concrete properties has not been established. Cell response from S4 has been omitted from Fig. I.1 because at least one of the top cells was improperly embedded.

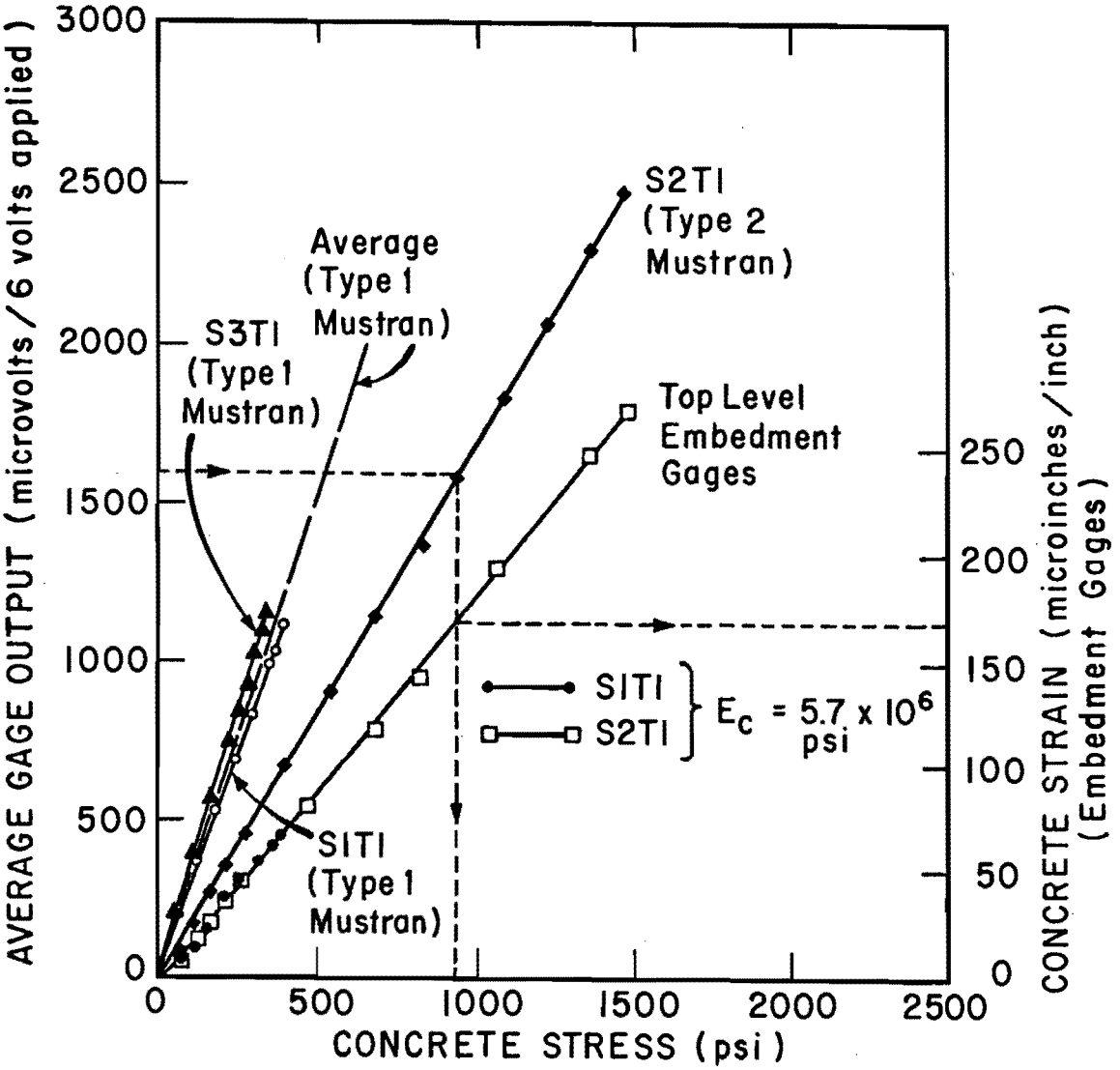

Fig. I.1. Response of Top-Level Mustran and Embedment Circuits

APPENDIX J

OUTPUT OF INSTRUMENTATION

DURING LOAD TESTS

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The following pages contain echo prints given by the computer of the raw data from the various load tests reported herein. A block of data for each value of applied load is printed which contains the following information:

NOTATION	EXPLANATION
FOR APPLIED LOAD OF	The value of applied load in pounds as indicated by the pressure transducer is printed after this expression.
TIP LOAD	The value of base load in pounds indicated by the bottomhole load cell is entered after this expression if the bottomhole cell was used. An entry of 0. indicates that BHC was not used, and not that the base load was zero.

The output from the Mustran cells is given in the next several lines, under the notational headings enumerated below. One line of output per level is printed.

DEPTH	Distance from ground surface to a level of Mustran cells in inches.
GRM1, GRM2, GRM3, GRM4	Gage reading for first, second, third, and fourth Mustran cells, respectively, at the level, in microvolts (except where noted). Blank means no cell. If more than four cells are located at a level, two separate levels with the same depth are printed on two separate lines to accommodate data for the extra cells.

DRM1, DRM2, DRM3, DRM4	Difference in gage reading from initial (zero applied load) gage reading for GRM1, GRM2, GRM3, and GRM4, respectively. These are the values plotted in Appendix K.
AVM	Average difference in gage reading from initial average gage reading.
LOAD (LBS)	Computed load for the level in question based on comparison of AVM with load-reading curve for calibration level output using the procedure suggested in Fig. 9.2. Values of load for the calibration level are not exactly equal to the applied load because the calibration curve for the shaft had been obtained by fitting a third degree polynomial through all points defining the applied load-reading relationship. Hence, discrete values do not, in general, lie on the best-fit calibration line.

The output for the embedment gages is given in the succeeding lines. The descriptions of the column headings are the same as those for the Mustran cells, except that the letter "E" is substituted for "M" where appropriate; and the words "embedment gage" are substituted for "Mustran cell" in the explanation. The embedment gage readings displayed have already been corrected for zero drift.

The final two lines contain the settlement gage readings:

SGZ1, SGZ2, SGZ3	Settlement gage reading in inches for first, second, and third (if used) settlement gages, respectively. Since settlement gages had only two inches travel, readings corresponding to settlements of over about 1.5 inches have been corrected to take account of placement of spacer blocks beneath stems of gages.
STT1, STT2, STT3	Difference between settlement gage reading and reading for zero applied load, in inches, for SGZ1, SGZ2, and SGZ3, respectively.
AVG	Average settlement, in inches.

Data for each test have been identified according to test number in the upper left-hand corner of the first data sheet for each test. Data from S1T2 and S4T3 have been excluded.

Pertinent information concerning individual tests is detailed below.

S1T1: All gages with ground resistance of less than 10 megohms excluded from data. Also excluded are E-0-1 and E-19-1 and E-19-2 because of obvious underregistration.

S1T3: All gages with ground resistance less than 10 megohms excluded from data. M-0-1 was excluded because water was detected in the cell chamber, although ground resistance remained high. E-0-1 excluded because of underregistration. Readout units are microvolts × 10.

S2T1: Individual level calibration procedure described in text used.

S2T2: Individual level calibration procedure described in text used.

S3T1L1: Readout units are in microvolts X 10.

S3T1L2: Readout units are in microvolts X 10.

S3T1L3: Readout units are in microvolts X 10. Residual loads not included in printout of load values.

S4T1: Individual level calibration procedure based upon calibration constants from S4T3 used.

S4T2: Readout units are in microinches per inch circuit strain as given by full bridge strain indicator. Individual level calibration procedure based upon calibration constants from S4T3 used.

TEST DATA: S1T1

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	4	59			0	-0			0	0.
121	-16	-1			-0	-0			0	0.
182	-36	-1212			-0	0			0	0.
254	7	3			-0	0			0	0.
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	1102				-0				0	0.
61	349	317			-0	-0			0	0.
157	493				-0				0	0.
205	31	132			-0	-0			0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.875	1.900	-0.	0.	0.	-.000	0.

FOR APPLIED LOAD OF 24000.00 LB TIP LOAD = 1340.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	108	-60			104	119			111	23977.03
121	-79	-77			63	76			69	14757.64
182	-81	-1170			45	42			43	9162.00
254	-4	25			11	22			16	3445.13
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	1054				48				48	23453.24
61	313	279			36	38			37	17668.04
157	475				18				18	8300.27
205	22	122			9	10			10	4402.37

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.870	1.898	-0.	.005	.002	*2.750	.003

FOR APPLIED LOAD OF 44400.00 LB TIP LOAD = 2340.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	212	-139			208	198			203	44780.54
121	-116	-155			100	154			127	27433.73
182	-121	-1142			85	70			77	16496.82
254	-12	36			19	33			26	5445.51
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	1013				89				89	45679.97
61	286	251			63	66			65	32387.84
157	461				32				32	15507.85
205	14	116			17	16			16	7724.24

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.866	1.891	-0.	.009	.009	.000	.009

FOR APPLIED LOAD OF 65000.00 LB TIP LOAD = 3340.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	315	-209			311	268			289	65261.00

121	-155	-232			139	231			185	40614.43
182	-159	-1118			123	94			108	23311.37
254	-18	47			25	44			34	7245.58
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	974				128				128	68429.89
61	253	217			96	100			98	50857.24
157	445				48				48	23505.12
205	4	106			27	26			26	12581.69

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.862	1.885	-0.	.013	.015	*0.000	.014

FOR APPLIED LOAD OF 86000.00 LB TIP LOAD = 4540.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	406	-240			402	339			370	85061.10
121	-214	-285			198	284			241	53686.82
182	-194	-1093			158	119			138	30016.66
254	-26	59			33	56			44	9375.59
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	948				154				154	84346.85
61	225	188			124	129			126	67408.83
157	429				64				64	31796.35
205	-5	98			36	34			35	16811.27

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.855	1.879	-0.	.020	.021	-.000	.021

FOR APPLIED LOAD OF 106000.00 LB TIP LOAD = 5760.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	502	-348			498	407			452	105628.02
121	-271	-341			255	340			297	67191.24
182	-232	-1071			196	141			168	36826.27
254	-34	70			41	67			54	11411.26
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	918				184				184	103351.25
61	195	158			153	158			156	85593.57
157	414				78				78	39812.11
205	-13	90			44	42			43	20874.29

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.848	1.871	-0.	.027	.029	.000	.028

FOR APPLIED LOAD OF 127000.00 LB TIP LOAD = 7200.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	588	-435			584	494			539	127794.78
121	-334	-400			318	399			358	82093.24
182	-277	-1051			241	161			201	44315.97
254	-42	84			49	81			65	13782.95
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	882				220				220	126912.94
61	163	124			196	193			190	107031.01
157	399				94				94	48628.19
205	-22	82			53	50			51	25276.27

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.840	1.862	-0.	.035	.038	.000	.036

FOR APPLIED LOAD OF 147400.00 LB TIP LOAD = 8920.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	663	-517			659	576			617	144243.54
121	-396	-456			380	455			417	96790.86
182	-324	-1038			288	174			231	51328.81
254	-50	97			57	94			75	16061.27
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	852				250				250	147050.34
61	131	91			218	226			222	128176.12
157	384				109				109	57107.99
205	-30	73			61	59			60	29763.43

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.830	1.851	-0.	.045	.049	.000	.047

FOR APPLIED LOAD OF 168000.00 LB TIP LOAD = 10940.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	744	-585			740	644			692	167868.67
121	-451	-513			435	512			473	110968.91
182	-372	-1024			336	188			262	58670.75
254	-60	110			67	107			87	18572.52
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	821				281				281	168215.82
61	104	62			245	255			250	146779.34
157	371				122				122	64599.39
205	-39	67			70	65			67	33791.45

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.816	1.836	-0.	.059	.064	.000	.061

FOR APPLIED LOAD OF 188400.00 LB TIP LOAD = 13780.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	829	-660			825	719			772	189101.43
121	-513	-578			497	577			537	127277.55
182	-429	-1015			393	197			295	66587.45
254	-72	128			79	125			102	21872.73
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	791				311				311	188931.97
61	75	32			274	285			280	167391.20
157	356				137				137	74059.35
205	-48	58			79	74			76	38707.66

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.796	1.816	-0.	.079	.084	-.000	.081

FOR APPLIED LOAD OF 208400.00 LB TIP LOAD = 19080.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	906	-722			902	781			841	207617.84
121	-566	-651			550	650			600	148661.79
182	-503	-1010			447	202			334	76192.57
254	-94	157			101	154			127	27545.71

DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	760				342				342	210463.01
61	48	4			301	313			307	186160.53
157	339				154				154	84346.85
205	-60	45			91	87			89	45679.97

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.764	1.782	-0.	.111	.118	*0.000	.114

FOR APPLIED LOAD OF 229400.00 LB TIP LOAD = 33600.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1001	-796			997	855			926	230136.45
121	-632	-747			616	746			681	164960.31
182	-620	-1006			584	206			395	91155.06
254	-142	225			149	222			185	40729.69

DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	730				372				372	231307.95
61	20	-23			329	340			334	205040.09
157	316				177				177	98669.27
205	-77	25			108	107			107	56291.37

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.691	1.710	-0.	.184	.190	*0.000	.187

FOR APPLIED LOAD OF 250000.00 LB TIP LOAD = 60200.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1083	-853			1079	912			995	248597.69
121	-701	-860			685	859			772	189101.43
182	-779	-981			743	231			487	114416.76
254	-221	357			228	354			291	65622.49

DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	708				394				394	246535.74
61	-3	-46			352	363			358	221516.86
157	287				206				206	117925.60
205	-102	-5			133	137			135	72660.29

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.533	1.551	-0.	.342	.349	*0.000	.345

FOR APPLIED LOAD OF 260000.00 LB TIP LOAD = 80200.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1133	-888			1129	947			1038	259834.94
121	-747	-944			731	943			837	206418.11
182	-894	-951			858	261			559	133107.86
254	-286	467			293	464			378	87045.92

DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	689				413				413	259610.01
61	-19	-63			368	380			374	232764.55
157	262				231				231	134317.14
205	-124	-31			155	163			159	87469.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.326	1.345	-0.	.549	.555	0.	.552

FOR APPLIED LOAD OF 280000.00 LB TIP LOAD = 100600.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1220	-950			1216	1019			1117	280698.95
121	-819	-1066			803	1065			934	232265.48
182	-1043	-899			1007	313			660	159417.49
254	-372	619			379	616			497	117105.91
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	658				444				444	280713.54
61	-47	-91			396	408			402	251913.45
157	229				264				264	156434.59
205	-151	-66			182	198			190	107225.24

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.810	.835	-0.	1.065	1.065	*8.567	1.065

FOR APPLIED LOAD OF 250000.00 LB TIP LOAD = 88000.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1073	-819			1069	878			973	242763.44
121	-725	-957			709	956			832	205218.43
182	-959	-959			923	253			588	140527.22
254	-328	552			335	549			442	102968.21
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	717				385				385	240315.55
61	-2	-44			351	361			356	220543.90
157	260				232				232	135255.12
205	-128	-39			159	171			165	91240.87

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.679	.802	-0.	1.196	1.098	.000	1.147

FOR APPLIED LOAD OF 208000.00 LB TIP LOAD = 82400.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	984	-738			980	797			888	220147.74
121	-664	-896			648	895			771	188968.38
182	-910	-998			874	214			544	129088.74
254	-301	517			308	514			411	95158.99
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	748				354				354	218806.23
61	22	-19			327	336			332	203302.33
157	217				276				276	164919.60
205	-117	-29			148	161			154	84658.24

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.680	.800	-0.	1.195	1.100	*0.000	1.147

FOR APPLIED LOAD OF 156000.00 LB TIP LOAD = 73400.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	724	-511			720	570			645	155466.67
121	-496	-721			480	720			600	143661.79
182	-792	-1089			756	123			439	102335.99
254	-249	459			256	456			356	81476.43
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	844				258				258	152482.34
61	101	63			248	254			251	147660.24

157	278			215				215	123531.31
205	-85	3		116	129			122	65135.86

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.693	.814	-0.	1.182	1.086	.000	1.134

FOR APPLIED LOAD OF 106000.00 LB TIP LOAD = 65400.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	464	-290			460	349			404	93530.14
121	-337	-548			321	547			434	100946.60
182	-677	-1177			641	35			338	77050.13
254	-207	408			214	405			309	70097.51
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	938				164				164	90610.46
61	179	144			170	173			171	95101.88
157	374				119				119	62816.42
205	-56	31			87	101			94	48514.23

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.710	.832	-0.	1.165	1.068	*3.992	1.116

FOR APPLIED LOAD OF 54000.00 LB TIP LOAD = 57400.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	203	-105			199	164			181	39808.39
121	-220	-362			204	361			282	63576.79
182	-570	-1260			534	-48			243	54159.62
254	-167	361			174	358			266	59624.91
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	1036				66				66	32980.78
61	253	220			96	97			97	50112.56
157	417				76				76	38597.45
205	-29	56			60	76			68	34062.23

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.730	.855	-0.	1.145	1.045	.000	1.095

FOR APPLIED LOAD OF 0. LB TIP LOAD = 45800.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-19	146			-23	-87			-55	-11207.56
121	-64	-187			48	186			117	25200.34
182	-439	-1353			403	-141			131	28330.39
254	-112	296			119	293			206	45478.29
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	1139				-37				-37	-15921.56
61	334	305			15	12			13	6292.59
157	468				25				25	11844.82
205	3	87			28	45			36	17567.04

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.763	.886	-0.	1.112	1.014	*0.000	1.063

TEST DATA: S1T3

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-9				-0				0	0.
121	-5	-2			-0	-0			0	0.
182	-9	-614			-0	0			0	0.
254	-2	3			-0	0			0	0.
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-136				-0				0	0.
61	-140	-75			-0	-0			0	0.
205	-74	-86			-0	-0			0	0.
229	-92				-0				0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.640	1.700	-0.	0.	0.	.000	0.

FOR APPLIED LOAD OF 32000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-24				15				15	35254.10
121	-14	-12			9	10			10	22175.99
182	-17	-608			8	6			7	16285.84
254	-4	6			2	3			3	5779.41
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-141				5				5	30302.32
61	-143	-79			3	4			4	21915.87
205	-76	-89			2	3			3	14481.24
229	-94				2				2	11473.79

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.635	1.697	-0.	.005	.003	-.000	.004

FOR APPLIED LOAD OF 64000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-36				27				27	64252.21
121	-21	-22			16	20			18	42449.84
182	-22	-603			13	11			12	28101.13
254	-7	8			5	5			5	11600.53
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-146				10				10	65462.07
61	-148	-93			8	8			8	53743.62
205	-77	-90			3	4			4	20655.92
229	-95				3				3	17542.28

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.630	1.691	-0.	.010	.009	.000	.009

FOR APPLIED LOAD OF 96000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-49				40				40	96131.04
121	-29	-32			24	30			27	64252.21

182	-29	-597			20	17			18	43653.00
254	-10	10			8	7			8	17460.96
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-150				14				14	96412.59
61	-153	-88			13	13			13	85331.53
205	-79	-91			5	5			5	30302.32
229	-95				3				3	17542.28

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.623	1.684	-0.	.017	.016	.000	.017

FOR APPLIED LOAD OF 130000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-61				52				52	125701.76
121	-39	-42			34	40			37	88748.44
182	-34	-591			25	23			24	56953.05
254	-12	13			10	10			10	23358.30
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-154				18				18	129315.38
61	-157	-93			17	18			17	123439.04
205	-81	-93			7	7			7	43839.54
229	-95				3				3	17542.28

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.614	1.675	-0.	.026	.025	*0.000	.026

FOR APPLIED LOAD OF 162000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-76				67				67	162444.65
121	-52	-51			47	49			48	115846.69
182	-43	-583			34	31			32	77698.98
254	-18	20			16	17			16	38846.88
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-158				22				22	163656.44
61	-162	-98			22	23			22	168024.60
205	-83	-96			9	10			10	61756.12
229	-98				6				6	36977.80

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.593	1.656	-0.	.047	.044	*0.000	.046

FOR APPLIED LOAD OF 194000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-90				81				81	196090.48
121	-66	-63			61	61			61	147805.95
182	-53	-573			44	41			42	102289.62
254	-26	28			24	25			24	58167.58
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-161				25				25	190046.90
61	-166	-103			26	28			27	209604.76
205	-96	-98			12	12			12	80661.17
229	-102				10				10	65462.07

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.547	1.609	-0.	.093	.091	.000	.092

FOR APPLIED LOAD OF 226000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-104				95				95	228679.24
121	-80	-74			75	72			73	178170.53
182	-64	-562			55	52			53	129394.07
254	-36	39			34	36			35	83833.31
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-166				30				30	234597.37
61	-171	-108			31	33			32	255985.84
205	-89	-101			15	15			15	104475.34
229	-104				12				12	80661.17

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.415	1.480	-0.	.225	.220	*0.000	.223

FOR APPLIED LOAD OF 250000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-112				103				103	246664.45
121	-88	-81			83	79			81	196090.48
182	-69	-554			60	60			60	145357.15
254	-42	46			40	43			41	99825.66
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-167				31				31	243520.15
61	-174	-111			34	36			35	275464.32
205	-91	-103			17	17			17	120934.77
229	-104				12				12	80661.17

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.198	1.260	-0.	.442	.440	.000	.441

FOR APPLIED LOAD OF 270000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-123				114				114	270461.06
121	-97	-93			92	91			91	220654.22
182	-77	-545			68	69			68	166087.39
254	-47	58			45	55			50	120775.48
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-170				34				34	270169.25
61	-177	-115			37	40			38	307705.74
205	-93	-105			19	19			19	137785.89
229	-108				16				16	112652.08

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.425	.491	-0.	1.215	1.209	.000	1.212

FOR APPLIED LOAD OF 250000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-111				102				102	244445.40
121	-87	-84			82	82			82	198458.30
182	-70	-554			61	60			60	146581.83
254	-40	52			38	49			43	104754.11
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-166				30				30	234597.37

61	-174	-111			34	36			35	278985.78
205	-91	-102			17	16			16	116780.68
229	-105				13				13	88471.86

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.419	.486	-0.	1.221	1.214	*0.000	1.217

FOR APPLIED LOAD OF 200000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-99				90				90	217188.26
121	-78	-74			73	72			72	175761.77
182	-64	-560			55	54			54	131854.19
254	-38	48			36	45			40	97362.38
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-161				25				25	190046.90
61	-169	-107			29	32			31	240844.47
205	-89	-102			15	16			15	108549.97
229	-104				12				12	80661.17

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.424	.487	-0.	1.216	1.213	.000	1.215

FOR APPLIED LOAD OF 150000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-77				68				68	164873.98
121	-63	-58			58	56			57	137998.39
182	-54	-568			45	46			45	109684.05
254	-33	44			31	41			36	86290.11
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-153				17				17	120934.77
61	-163	-100			23	25			24	184737.62
205	-86	-99			12	13			12	84549.76
229	-103				11				11	72988.56

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.436	.499	-0.	1.204	1.201	.000	1.203

FOR APPLIED LOAD OF 100000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-53				44				44	105986.51
121	-47	-41			42	39			40	97362.38
182	-44	-578			35	36			35	85061.51
254	-28	38			26	35			30	72800.68
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-144				8				8	50879.52
61	-156	-93			16	18			17	117609.49
205	-84	-95			10	9			10	61756.12
229	-100				8				8	50879.52

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.452	.517	-0.	1.188	1.183	.000	1.185

FOR APPLIED LOAD OF 50000.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-32				23				23	54526.53
121	-34	-25			29	23			26	61816.04
182	-33	-588			24	26			25	59382.94
254	-22	33			20	30			25	59382.94
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-135				-1				-1	-5389.23
61	-149	-86			9	11			10	63975.01
205	-81	-93			7	7			7	43839.54
229	-99				7				7	43839.54

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.473	.539	-0.	1.167	1.161	.000	1.164

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-6				-3				-3	-6876.84
121	-14	-13			9	11			10	23358.30
182	-18	-603			9	11			10	23358.30
254	-12	22			10	19			14	34058.84
DEPTH	GRE1	GRE2	GRE3	GRE4	DRE1	DRE2	DRE3	DRE4	AVE	LOAD (LBS)
0	-125				-11				-11	-44619.73
61	-142	-78			2	3			3	14481.24
205	-77	-89			3	3			3	17542.29
229	-93				1				1	5623.69

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.532	.597	-0.	1.108	1.103	*5.262	1.105

TEST DATA : S2T1

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	20	-29	-54		0	0	0		0	0.
44	-11	-12	-9		0	0	-0		0	0.
86	113	-7	5		0	0	0		0	0.
122	-4	0	11		-0	0	0		0	0.
164	6	-46	-1		0	-0	0		0	0.
188	-8	0	-33	36	0	0	-0	-0	0	0.
206	-126	-201	-4	0	-0	-0	-0	-0	0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.913	1.802	-0.	0.	0.	*0.000	0.

FOR APPLIED LOAD OF 20529.60 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	58	26	-3		38	55	51		48	20412.90
44	33	27	-50		44	39	41		41	20708.00
86	154	28	50		41	35	45		40	16859.33
122	-38	31	50		34	31	39		35	15634.67
164	37	-77	29		31	31	30		31	13278.67
188	16	24	-57	12	24	24	24	24	24	10416.0
206	-153	-227	-29	-27	27	26	25	27	26	10053.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.910	1.799	-0.	.003	.003	.000	.003

FOR APPLIED LOAD OF 39039.60 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	86	85	41		66	114	95		92	39049.88
44	80	63	-70		91	75	61		76	37909.00
86	180	59	101		67	66	96		76	31907.33
122	-61	64	82		57	64	71		64	28864.00
164	65	-105	54		59	59	55		58	24969.67
188	36	46	-78	-8	44	46	45	44	45	19421.5
206	-175	-247	-49	-49	49	46	45	49	47	18096.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.909	1.796	-0.	.004	.006	*0.000	.005

FOR APPLIED LOAD OF 57985.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	115	142	84		95	171	138		135	57461.64
44	128	99	-90		139	111	81		110	55277.00
86	203	88	152		90	95	147		111	46258.67
122	-85	96	115		81	96	104		94	42243.67
164	94	-135	76		88	89	77		85	36660.67
188	56	68	-96	-30	64	68	63	66	65	28318.5

206	-198	-266	-68	-73	72	65	64	73	68	26235.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.908	1.793	-0.	.005	.009	*0.000	.007

FOR APPLIED LOAD OF 78514.80 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	152	201	130		132	230	184		182	77793.49
44	184	137	-115		195	149	106		150	75150.00
86	232	120	212		119	127	207		151	63118.00
122	-106	134	150		102	134	139		125	56375.00
164	125	-163	101		119	117	102		113	48784.67
188	78	94	-117	-56	86	94	84	92	89	38626.0
206	-222	-285	-88	-97	96	84	84	97	90	34565.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.901	1.789	-0.	.012	.013	*0.000	.012

FOR APPLIED LOAD OF 97624.80 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	193	261	174		173	290	228		230	98620.99
44	236	174	-138		247	186	129		187	93854.00
86	258	150	266		145	157	261		188	78444.67
122	-128	172	183		124	172	172		156	70356.00
164	157	-192	123		151	146	124		140	60764.33
188	99	116	-133	-78	107	116	100	114	109	47414.5
206	-244	-303	-105	-121	118	102	101	121	110	42321.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.898	1.785	-0.	.015	.017	*0.000	.016

FOR APPLIED LOAD OF 116407.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	231	310	218		211	339	272		274	117491.66
44	290	211	-165		301	223	156		227	113560.00
86	287	182	323		174	189	318		227	94886.00
122	-151	207	214		147	207	203		186	83735.67
164	188	-219	145		182	173	146		167	72311.00
188	118	139	-149	-103	126	139	116	139	130	56420.0
206	-269	-319	-124	-146	143	118	120	146	132	50460.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.891	1.780	-0.	.022	.022	*0.000	.022

FOR APPLIED LOAD OF 137046.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	270	367	262		250	396	316		321	137712.10
44	340	253	-192		351	265	183		266	133433.00
86	311	214	381		198	221	376		265	110770.00
122	-170	244	249		166	244	238		216	97416.00
164	219	-248	164		213	202	165		193	83713.33
188	136	163	-162	-127	144	163	129	163	150	64991.5

206	-294	-333	-141	-171	168	132	137	171	152	58216.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.884	1.773	-0.	.029	.029	*0.000	.029

FOR APPLIED LOAD OF 157248.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	305	425	310		285	454	364		368	158129.03
44	389	290	-210		400	302	201		301	150801.00
86	330	244	423		217	251	418		295	123449.33
122	-188	276	292		184	276	271		244	109893.67
164	250	-278	181		244	232	182		219	94971.33
188	152	185	-176	-151	160	185	143	187	169	73237.5
206	-318	-343	-154	-196	192	142	150	196	170	65110.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.877	1.766	-0.	.036	.036	*0.000	.036

FOR APPLIED LOAD OF 177668.40 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	336	485	367		316	514	421		417	179611.74
44	443	342	-229		454	354	220		343	171676.00
86	349	284	490		236	291	485		337	141005.33
122	-204	313	314		200	313	303		272	122672.00
164	279	-307	192		273	261	193		242	104930.33
188	164	207	-182	-176	172	207	149	212	185	80290.0
206	-343	-347	-164	-220	217	146	160	220	186	71142.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.867	1.756	-0.	.046	.046	*0.000	.046

FOR APPLIED LOAD OF 197324.40 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	362	542	416		342	571	470		461	198813.66
44	491	385	-238		502	397	229		376	188376.00
86	360	317	541		247	324	536		369	154242.00
122	-209	349	350		205	349	339		298	134247.67
164	312	-334	205		306	288	206		267	115466.67
188	180	232	-189	-202	188	232	156	238	203	88319.0
206	-368	-352	-174	-243	242	151	170	243	201	77174.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.856	1.746	-0.	.057	.056	*0.000	.056

FOR APPLIED LOAD OF 246355.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	410	677	565		390	706	619		572	247262.29
44	601	517	-262		612	529	253		465	232798.00
86	373	424	670		260	431	665		452	188936.00
122	-222	434	446		218	434	435		362	163412.33
164	386	-420	216		380	374	217		324	140147.67
188	202	301	-239	-272	210	301	176	308	249	107957.5

206	-449	-362	-207	-314	323	161	203	314	250	95845.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.820	1.709	-0.	.093	.093	*0.000	.093

FOR APPLIED LOAD OF 297460.80 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	460	813	725		440	842	779		687	297944.92
44	715	658	-280		726	670	271		556	278389.00
86	372	543	804		259	550	799		536	224048.00
122	-213	528	565		209	528	554		430	194080.33
164	476	-542	209		470	496	210		392	169736.00
188	219	417	-224	-366	227	417	191	402	309	134214.5
206	-575	-351	-248	-410	449	150	244	410	313	119974.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.754	1.649	-0.	.159	.153	*0.000	.156

FOR APPLIED LOAD OF 344962.80 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	511	938	873		491	967	927		795	345533.85
44	820	785	-305		831	797	296		641	321308.00
86	369	666	955		256	673	950		626	261807.33
122	-209	633	723		205	633	712		517	233016.67
164	583	-724	211		577	678	212		489	211737.00
188	240	591	-268	-487	248	591	235	523	399	173274.5
206	-770	-349	-329	-538	644	148	325	538	414	158466.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.662	1.563	-0.	.251	.239	*0.000	.245

FOR APPLIED LOAD OF 395522.40 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	569	1065	1026		549	1094	1080		908	395262.30
44	934	925	-345		945	937	336		739	370406.00
86	388	810	1124		275	817	1119		737	308066.00
122	-229	749	906		225	749	895		623	280973.00
164	712	-936	232		706	890	233		610	263985.67
188	280	800	-334	-635	288	800	301	671	515	223510.0
206	-998	-369	-437	-699	872	168	433	699	543	207969.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.557	1.464	-0.	.356	.338	*0.000	.347

FOR APPLIED LOAD OF 444553.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	627	1185	1170		607	1214	1224		1015	442669.76
44	1040	1062	-391		1051	1074	382		836	418669.00
86	415	955	1286		302	962	1281		848	354603.33
122	-254	862	1094		250	862	1083		732	329981.67
164	843	-1136	266		837	1090	267		731	316667.33
188	332	1003	-408	-783	340	1003	375	819	634	275264.5

206	-1214	-405	-549	-860	1088	204	545	860	674	258237.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.453	1.364	-0.	.460	.438	*0.000	.449

FOR APPLIED LOAD OF 499917.60 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	699	1331	1343		679	1360	1397		1145	500214.79
44	1163	1216	-452		1174	1228	443		948	475115.00
86	457	1112	1449		344	1119	1444		969	405042.00
122	-289	978	1294		285	978	1283		849	382748.67
164	977	-1334	320		971	1288	321		860	372380.00
188	405	1197	-500	-935	413	1197	467	971	762	330708.0
206	-1419	-474	-672	-1033	1293	273	668	1033	817	312815.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.347	1.264	-0.	.566	.538	*0.000	.552

FOR APPLIED LOAD OF 545781.60 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	763	1426	1476		743	1455	1530		1243	543130.34
44	1251	1329	-509		1262	1341	500		1034	518201.00
86	494	1254	1593		381	1261	1588		1077	450046.67
122	-323	1078	1463		319	1078	1452		950	428299.67
164	1088	-1498	371		1082	1452	372		969	419432.67
188	475	1351	-584	-1062	483	1351	551	1098	871	377905.5
206	-1571	-553	-781	-1180	1445	352	777	1180	938	359445.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.249	1.168	-0.	.664	.634	*0.000	.649

FOR APPLIED LOAD OF 599508.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	843	1553	1639		823	1582	1693		1366	597380.11
44	1364	1475	-581		1375	1487	572		1145	573478.00
86	548	1412	1760		435	1419	1755		1203	502854.00
122	-370	1199	1658		366	1199	1647		1071	482870.67
164	1217	-1668	443		1211	1622	444		1092	472980.33
188	571	1519	-685	-1198	579	1519	652	1234	996	432264.0
206	-1732	-662	-907	-1342	1606	461	903	1342	1078	412874.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.141	1.065	-0.	.772	.737	*0.000	.755

FOR APPLIED LOAD OF 643734.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	912	1657	1770		892	1686	1824		1467	641800.98
44	1456	1584	-645		1467	1596	636		1233	617733.00
86	594	1539	1898		481	1546	1893		1307	546186.67
122	-411	1293	1811		407	1293	1800		1167	526166.67
164	1314	-1804	507		1308	1758	508		1191	515847.33
188	651	1641	-774	-1305	659	1641	741	1341	1095	475447.0

206	-1849	-765	-1014	-1455	1723	564	1010	1455	1188	455004.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.042	.968	-0.	.871	.834	*0.000	.852

FOR APPLIED LOAD OF 690690.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	993	1767	1906		973	1796	1960		1576	689384.21
44	1555	1694	-717		1566	1706	708		1327	664660.00
86	654	1671	2045		541	1678	2040		1420	593420.67
122	-468	1400	1972		464	1400	1961		1275	575025.00
164	1421	-1945	590		1415	1899	591		1302	563621.67
188	747	1773	-878	-1414	755	1773	845	1450	1206	523295.5
206	-1973	-891	-1141	-1595	1847	690	1137	1595	1317	504506.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.940	.866	-0.	.973	.936	.000	.954

FOR APPLIED LOAD OF 739720.80 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1084	1887	2038		1064	1916	2092		1691	739025.41
44	1664	1804	-799		1675	1816	790		1427	714927.00
86	721	1796	2211		608	1803	2206		1539	643302.00
122	-527	1515	2132		523	1515	2121		1386	625236.33
164	1532	-2089	681		1526	2043	682		1417	613561.00
188	852	1907	-994	-1526	860	1907	961	1562	1322	573965.0
206	-2098	-1037	-1282	-1728	1972	836	1278	1728	1453	556690.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.821	.749	-0.	1.092	1.053	.000	1.072

FOR APPLIED LOAD OF 794648.40 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1196	2030	2189		1176	2059	2243		1826	797354.74
44	1799	1918	-885		1810	1930	876		1539	770872.00
86	797	1932	2409		684	1939	2404		1676	700428.67
122	-586	1648	2303		582	1648	2292		1507	679807.33
164	1651	-2243	779		1645	2197	780		1541	667108.67
188	966	2052	-1121	-1641	974	2052	1088	1677	1448	628323.5
206	-2231	-1202	-1439	-1858	2105	1001	1435	1858	1600	612704.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.682	.612	-0.	1.231	1.190	.000	1.210

FOR APPLIED LOAD OF 849248.40 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1302	2154	2319		1282	2183	2373		1946	848618.47
44	1920	2022	-967		1931	2034	958		1641	822141.00
86	867	2052	2597		754	2059	2592		1802	753096.67
122	-644	1774	2460		640	1774	2449		1621	731071.00
164	1759	-2389	876		1753	2343	877		1658	717769.67
188	1072	2192	-1251	-1747	1080	2192	1218	1783	1568	680620.5

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  206 -2362 -1368 -1605 -1976  2236  1167  1601  1976  1745   668335.0

   SGZ1     SGZ2     SGZ3     STT1     STT2     STT3     AVG
  .525     .461    -0.      1.388    1.341     .000    1.364

FOR APPLIED LOAD OF  895221.60 LB    TIP LOAD =        0.   LB
                          ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

  DEPTH  GRM1  GRM2  GRM3  GRM4  DRM1  DRM2  DRM3  DRM4  AVM   LOAD (LBS)
      0  1397  2291  2444        1377  2320  2498        2065  898967.61
     44  2052  2114 -1027        2063  2126  1018        1736  869569.00
     86   917  2159  2785         804  2166  2780        1917  801166.67
    122  -689  1893  2605         685  1893  2594        1724  777524.00
    164  1863 -2534   951        1857  2488   952        1766  764533.67
    188  1162  2324 -1360 -1845  1170  2324  1327  1881  1675   727167.0
    206 -2488 -1503 -1747 -2085  2362  1302  1743  2085  1873   717359.0

   SGZ1     SGZ2     SGZ3     STT1     STT2     STT3     AVG
  .348     .285    -0.      1.565    1.517   *0.000    1.541

FOR APPLIED LOAD OF  941194.80 LB    TIP LOAD =        0.   LB
                          ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

  DEPTH  GRM1  GRM2  GRM3  GRM4  DRM1  DRM2  DRM3  DRM4  AVM   LOAD (LBS)
      0  1504  2397  2561        1484  2426  2615        2175  945024.95
     44  2157  2204 -1122        2168  2216  1113        1832  917999.00
     86   992  2267  2958         879  2274  2953        2035  850769.33
    122  -741  2008  2753         737  2008  2742        1829  824879.00
    164  1962 -2681  1031        1956  2635  1032        1874  811586.33
    188  1251  2468 -1474 -1947  1259  2468  1441  1983  1788   775883.5
    206 -2627 -1638 -1902 -2198  2501  1437  1898  2198  2008   769255.5

   SGZ1     SGZ2     SGZ3     STT1     STT2     STT3     AVG
  .154     .092    -0.      1.759    1.710     .000    1.734

FOR APPLIED LOAD OF  995248.80 LB    TIP LOAD =        0.   LB
                          ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

  DEPTH  GRM1  GRM2  GRM3  GRM4  DRM1  DRM2  DRM3  DRM4  AVM   LOAD (LBS)
      0  1621  2536  2676        1601  2565  2730        2299  996188.92
     44  2292  2287 -1201        2303  2299  1192        1931  967598.00
     86  1059  2373  3166         946  2380  3161        2162  903855.33
    122  -790  2146  2909         786  2146  2898        1943  876443.33
    164  2081 -2852  1110        2075  2806  1111        1997  864845.33
    188  1340  2637 -1590 -2072  1348  2637  1557  2108  1912   830025.0
    206 -2803 -1769 -2066 -2338  2677  1568  2062  2338  2161   827758.7

   SGZ1     SGZ2     SGZ3     STT1     STT2     STT3     AVG
 -.127    -.184    -0.      2.040    1.986    -.000    2.013

FOR APPLIED LOAD OF 1050285.60 LB    TIP LOAD =        0.   LB
                          ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

  DEPTH  GRM1  GRM2  GRM3  GRM4  DRM1  DRM2  DRM3  DRM4  AVM   LOAD (LBS)
      0  1738  2668  2815        1718  2697  2869        2428 1048929.63
     44  2416  2392 -1375        2427  2404  1296        2042 1023209.00
     86  1140  2508  3355        1027  2515  3350        2297  960285.33
    122  -854  2277  3088         850  2277  3077        2068  932668.00
    164  2194 -3044  1179        2188  2998  1180        2122  918826.00
    188  1411  2813 -1706 -2192  1419  2813  1673  2228  2033   882430.5
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206	-2997	-1879	-2233	-2477	2871	1678	2229	2477	2314	886166.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.498	-.551	-0.	2.411	2.353	*2.750	2.382

FOR APPLIED LOAD OF 1074528.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1797	2725	2865		1777	2754	2919		2483	1071235.50
44	2479	2418	-1339		2490	2430	1330		2083	1043750.00
86	1174	2563	3446		1061	2570	3441		2357	985365.33
122	-871	2328	3184		867	2328	3173		2123	957322.67
164	2230	-3143	1194		2224	3097	1195		2172	940476.00
188	1421	2914	-1741	-2240	1429	2914	1708	2276	2082	903479.5
206	-3097	-1895	-2298	-2524	2971	1694	2294	2524	2371	907997.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.942	-.998	-0.	2.855	2.800	.000	2.827

FOR APPLIED LOAD OF 980288.40 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1622	2503	2619		1602	2532	2673		2269	983977.88
44	2294	2198	-1173		2305	2210	1164		1893	948393.00
86	988	2322	3271		875	2329	3266		2157	901486.67
122	-675	2222	2859		671	2222	2848		1914	863063.67
164	2201	-2839	924		2195	2793	925		1971	853443.00
188	1316	2641	-1393	-2245	1324	2641	1360	2281	1901	825251.0
206	-2827	-1585	-1890	-2561	2701	1384	1886	2561	2133	816939.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.974	-1.024	-0.	2.887	2.826	*0.000	2.856

FOR APPLIED LOAD OF 786349.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1496	2304	2488		1476	2333	2542		2117	920801.17
44	2109	2080	-1090		2120	2092	1081		1764	883931.00
86	886	2200	3067		773	2207	3062		2014	841852.00
122	-565	2092	2666		561	2092	2655		1769	797969.33
164	2207	-2602	713		2201	2556	714		1824	789647.67
188	1268	2383	-1013	-2348	1276	2383	980	2384	1756	761995.5
206	-2527	-1192	-1318	-2810	2401	991	1314	2810	1879	719657.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.986	-1.042	-0.	2.899	2.844	-.000	2.871

FOR APPLIED LOAD OF 800654.40 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1359	2131	2285		1339	2160	2339		1946	848618.47
44	1964	1909	-963		1975	1921	954		1617	809950.00
86	760	2033	2909		647	2040	2904		1864	779012.67
122	-463	1969	2483		459	1969	2472		1633	736633.33
164	2079	-2441	597		2073	2395	598		1689	731192.67

188	1178	2250	-905	-2239	1186	2250	872	2275	1646	714255.5
206	-2405	-1088	-1206	-2689	2279	887	1202	2689	1764	675707.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.987	-1.045	-0.	2.900	2.847	.000	2.873

FOR APPLIED LOAD OF 603330.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	979	1568	1742		959	1597	1796		1451	634506.08
44	1486	1448	-681		1497	1460	672		1210	606043.00
86	491	1616	2383		378	1623	2378		1460	610140.67
122	-244	1577	2045		240	1577	2034		1284	578933.67
164	1727	-2071	378		1721	2025	379		1375	595375.00
188	947	1967	-736	-1918	955	1967	703	1954	1395	605321.5
206	-2123	-905	-1033	-2315	1997	704	1029	2315	1511	578808.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.929	-.990	-0.	2.842	2.792	.000	2.817

FOR APPLIED LOAD OF 405132.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	620	996	1143		600	1025	1197		941	409836.58
44	1010	945	-442		1021	957	433		804	402637.00
86	276	1151	1803		163	1158	1798		1040	434580.67
122	-49	1111	1522		45	1111	1511		889	400939.00
164	1267	-1553	135		1261	1507	136		968	419144.00
188	647	1517	-469	-1433	655	1517	436	1469	1019	442354.5
206	-1644	-616	-724	-1761	1518	415	720	1761	1103	422640.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.812	-.876	-0.	2.725	2.678	.000	2.701

FOR APPLIED LOAD OF 197215.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM_1	GRM_2	GRM_3	GRM4	DRM_1	DRM_2	DRM_3	DRM4	AVM	LOAD (LBS)
0	343	397	415		323	426	469		406	174817.26
44	513	317	-272		524	329	263		372	186372.00
86	161	534	1133		48	541	1128		572	239235.33
122	82	569	805		-86	569	794		426	191975.67
164	716	-869	-73		710	823	-72		487	210871.00
188	326	951	-230	-881	334	951	197	917	600	260291.5
206	-1119	-363	-408	-1140	993	162	404	1140	675	258429.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.594	-.675	-0.	2.507	2.477	.000	2.492

FOR APPLIED LOAD OF -109.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2	-133	-188		-22	-104	-134		-87	-36649.17
44	-18	-122	-26		-7	-110	17		-33	-16700.00
86	4	58	323		-109	65	318		91	38177.33
122	188	31	182		-192	31	171		3	1503.33
164	142	-252	-208		136	206	-207		45	19485.00
188	-9	364	-40	-198	-1	364	7	234	151	65534.0

206	-536	-144	-140	-381	410	-57	136	381	217	83302.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.233	-.326	-0.	2.146	2.128	-.000	2.137

TEST DATA: S2T2

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-22	-1	-23		0	0	0		0	0.
44	-23	-40	-49		0	0	-0		0	0.
86	-269	-1	-84		0	0	0		0	0.
122	30	-6	15		0	0	0		0	0.
164	3	20	4		0	-0	0		0	0.
188	6	352	35	11	0	0	-0	-0	0	0.
206	0	-35	38	9	-0	-0	-0	-0	0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
0.	0.	-0.	0.	0.	*0.000	0.

FOR APPLIED LOAD OF 21889.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	36	74	4		58	75	27		53	20485.87
44	37	-28	-45		65	12	36		38	14268.33
86	-228	11	-12		41	12	72		42	16916.67
122	61	30	37		31	36	22		30	14180.67
164	37	-6	35		34	26	31		30	13043.33
188	34	378	13	-14	28	26	22	27	26	12231.2
206	-27	-41	14	-21	27	26	24	30	27	12973.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.002	-.002	-0.	.002	.002	*0.000	.002

FOR APPLIED LOAD OF 40426.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	62	144	59		84	145	82		104	39838.19
44	88	14	-99		116	54	50		73	35566.67
86	-206	45	43		63	46	127		79	35714.67
122	42	61	72		52	67	57		59	28042.67
164	64	-33	59		61	53	55		56	24223.33
188	56	412	-4	-39	50	50	39	50	47	22443.7
206	-50	-81	-5	-47	50	46	43	56	49	23643.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.005	-.004	-0.	.005	.004	*0.000	.005

FOR APPLIED LOAD OF 60934.80 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	83	217	122		105	218	145		156	59977.59
44	137	66	-113		165	106	64		112	54158.33
86	-190	87	97		79	88	181		116	52664.00
122	102	95	117		72	101	102		92	43816.67
164	92	-47	46		89	87	82		86	36980.00
188	75	428	-25	-64	59	76	60	75	70	33250.0
206	-77	-102	-28	-74	77	67	66	83	73	35526.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.009	-.007	-0.	.009	.007	*0.000	.008

FOR APPLIED LOAD OF 81098.50 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	97	278	178		119	279	201		200	76795.04
44	178	115	-120		206	155	71		144	69840.00
86	-179	127	144		90	128	228		149	67494.67
122	114	121	155		84	127	140		117	55926.00
164	118	-100	106		115	120	102		112	48303.33
188	96	455	-45	-91	90	103	90	102	94	44531.2
206	-105	-121	-49	-102	105	86	87	111	97	47166.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.012	-.009	-0.	.012	.009	*0.000	.011

FOR APPLIED LOAD OF 100572.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	118	349	243		140	350	266		252	96965.07
44	229	169	-140		257	209	81		182	88431.67
86	-166	173	200		103	174	284		187	84898.00
122	131	158	209		101	164	194		153	73134.00
164	148	-133	126		145	153	122		140	60200.00
188	115	480	-61	-116	109	134	96	127	116	55337.5
206	-131	-131	-66	-128	131	96	104	137	117	56745.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.017	-.012	-0.	.017	.012	*0.000	.015

FOR APPLIED LOAD OF 118024.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	145	419	307		167	420	330		306	117664.46
44	279	224	-143		307	264	94		222	107508.33
86	-152	220	257		117	221	341		226	102755.33
122	140	149	251		116	195	236		182	87155.33
164	172	-158	145		169	188	141		166	71380.00
188	134	514	-79	-144	128	162	114	155	140	66381.2
206	-161	-152	-88	-158	161	117	126	167	143	69233.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.020	-.015	-0.	.020	.015	.000	.017

FOR APPLIED LOAD OF 140258.50 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	167	490	370		189	491	399		360	138506.88
44	333	283	-159		361	323	110		265	128363.33
86	-135	271	318		134	272	402		269	122277.33
122	164	225	362		134	231	287		217	103885.33
164	203	-212	161		200	222	157		193	82990.00
188	150	542	-94	-170	144	190	129	181	161	76475.0
206	-188	-166	-104	-187	188	131	142	196	164	79661.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.025	-.019	-.0	.025	.019	.000	.022

FOR APPLIED LOAD OF 158154.40 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	190	549	428		212	550	451		404	155756.88
44	376	332	-170		404	372	121		299	145015.00
86	-125	313	371		144	314	455		304	138167.33
122	177	255	346		147	261	331		246	117747.33
164	229	-234	176		226	254	172		217	93453.33
188	168	571	-109	-195	142	219	144	206	183	86806.2
206	-215	-177	-121	-215	215	142	159	224	185	89725.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.030	-.022	-.0	.030	.022	.000	.024

FOR APPLIED LOAD OF 178120.90 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	219	628	490		241	629	519		463	174425.92
44	426	380	-193		454	426	134		338	153930.00
86	-116	362	430		153	363	514		343	155873.33
122	195	288	393		155	294	378		276	131768.67
164	258	-275	191		255	295	187		246	105636.67
188	187	610	-127	-230	181	254	162	241	209	99512.5
206	-252	-192	-142	-252	252	157	180	261	212	103062.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.036	-.028	-.0	.036	.028	.000	.032

FOR APPLIED LOAD OF 197052.10 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	240	691	556		262	692	579		511	196982.59
44	469	436	-193		497	476	144		372	180581.67
86	-110	410	443		159	411	567		379	172066.00
122	194	322	442		164	328	427		306	146427.33
164	299	-326	218		296	346	212		285	122406.67
188	218	669	-156	-286	212	307	191	291	250	118868.7
206	-307	-217	-175	-307	307	182	213	316	254	123432.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.044	-.035	-.0	.044	.035	.000	.039

FOR APPLIED LOAD OF 218941.30 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	271	759	625		293	770	648		570	219930.68
44	527	498	-205		555	538	156		416	201921.67
86	-92	445	568		177	466	642		428	194463.33
122	218	370	508		188	376	493		352	168415.33
164	349	-343	243		346	403	239		329	141613.33
188	248	713	-180	-331	242	363	215	342	290	137987.5
206	-363	-238	-206	-363	363	203	244	372	295	143317.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG

-.054	-.044	-1.	.054	.044	.000	.049

FOR APPLIED LOAD OF 241915.10 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	301	841	688		323	842	711		625	241211.14
44	561	554	-219		608	594	170		457	221806.67
86	-76	519	629		193	520	713		475	215801.33
122	239	417	571		209	423	556		396	189288.00
164	399	-443	271		396	463	267		375	161393.33
188	283	773	-207	-387	277	421	242	398	334	158887.5
206	-423	-263	-240	-425	423	228	278	434	341	165263.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.067	-.055	-1.	.067	.055	-.000	.061

FOR APPLIED LOAD OF 259860.30 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	328	918	748		350	909	771		677	261078.88
44	610	601	-232		658	647	183		496	240560.00
86	-64	567	692		205	568	776		516	234415.33
122	252	457	625		222	463	610		432	206336.67
164	440	-494	241		437	514	287		413	177446.67
188	304	819	-231	-437	302	467	266	448	371	176106.2
206	-473	-285	-269	-480	473	250	307	499	380	184178.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.079	-.065	-1.	.079	.065	*2.750	.072

FOR APPLIED LOAD OF 278347.80 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	355	971	803		377	972	826		725	279789.65
44	679	657	-242		707	697	193		532	258181.67
86	-54	613	756		215	614	840		556	252575.33
122	266	502	681		236	508	666		470	224660.00
164	487	-546	310		484	566	306		452	194360.00
188	336	869	-253	-490	330	517	288	501	409	194275.0
206	-524	-330	-297	-538	524	271	335	547	419	203336.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.092	-.076	-1.	.092	.076	.000	.084

FOR APPLIED LOAD OF 297032.50 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	382	1034	859		404	1035	882		774	298632.51
44	728	719	-252		756	749	203		569	276126.67
86	-42	661	819		227	662	903		597	271189.33
122	291	545	737		251	551	722		508	242824.00
164	532	-598	331		529	618	327		491	211273.33
188	366	918	-273	-538	360	566	308	549	446	211731.2
206	-573	-339	-325	-592	573	294	363	601	458	222008.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.106	-.088	-1.	.106	.088	*0.000	.097

FOR APPLIED LOAD OF 319513.30 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	413	1104	924		435	1105	947		829	320059.00
44	782	770	-258		810	810	219		613	297305.00
86	-30	717	889		239	718	973		643	292073.33
122	295	590	801		265	602	786		551	263376.00
164	593	-669	356		580	679	352		537	230910.00
188	402	975	-362	-597	396	823	337	608	491	233225.0
206	-630	-360	-360	-659	630	325	398	668	505	245046.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.120	-.102	-0.	.120	.102	-.000	.111

FOR APPLIED LOAD OF 342092.70 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	446	1178	992		468	1177	1015		887	342390.23
44	840	833	-243		868	873	234		658	319291.67
86	-15	776	966		254	777	1050		694	314924.67
122	312	652	870		282	658	855		598	286003.33
164	640	-719	382		637	739	378		585	251406.67
188	439	1082	-328	-657	433	680	363	668	536	254600.0
206	-695	-331	-395	-726	686	356	433	735	552	267962.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.137	-.116	-0.	.137	.116	.000	.126

FOR APPLIED LOAD OF 357079.90 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	470	1229	1038		492	1230	1061		928	358267.14
44	881	877	-293		909	917	244		690	334650.00
86	-10	816	1020		259	817	1104		727	329906.67
122	321	692	918		291	698	903		631	301458.67
164	679	-745	395		676	785	391		617	265453.33
188	464	1073	-345	-701	458	721	380	712	568	269681.2
206	-724	-413	-421	-776	724	378	459	785	586	284452.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.152	-.130	-0.	.152	.130	.000	.141

FOR APPLIED LOAD OF 383208.90 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	508	1304	1104		530	1305	1127		987	381371.02
44	941	941	-312		969	981	263		738	357768.33
86	4	878	1100		273	879	1184		779	353514.67
122	340	755	991		310	761	976		682	326155.33
164	742	-837	424		739	857	420		672	288960.00
188	505	1134	-341	-771	499	782	416	782	620	294381.2
206	-787	-450	-458	-846	787	415	496	855	638	309551.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.170	-.146	-0.	.170	.146	.000	.158

FOR APPLIED LOAD OF 394794.40 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	531	1352	1143		553	1353	1146		1024	395567.25
44	979	979	-320		1007	1019	271		766	371348.33
86	7	912	1151		276	913	1235		808	366832.00
122	343	791	1031		313	797	1016		709	338742.67
164	776	-875	434		773	895	430		699	300713.33
188	531	1173	-398	-816	525	621	433	827	651	309462.5
206	-829	-476	-446	-901	829	441	524	910	676	327860.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.187	-.161	-0.	.187	.161	.000	.174

FOR APPLIED LOAD OF 446460.80 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	622	1518	1290		644	1519	1313		1159	447687.37
44	1115	1110	-360		1143	1156	311		870	421950.00
86	39	1041	1324		308	1042	1408		919	417377.33
122	381	925	1179		350	931	1164		815	384570.00
164	909	-1017	490		906	1037	486		810	348156.67
188	618	1292	-457	-949	612	940	492	960	751	356725.0
206	-940	-549	-557	-1043	940	514	595	1052	775	375996.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.233	-.204	-0.	.233	.204	-.000	.218

FOR APPLIED LOAD OF 494626.90 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	711	1670	1429		733	1671	1452		1285	496669.95
44	1246	1242	-399		1274	1282	350		969	469803.33
86	65	1161	1497		334	1162	1581		1026	465652.67
122	436	1062	1319		376	1068	1304		916	437848.00
164	1043	-1157	536		1040	1177	532		916	394023.33
188	703	1409	-515	-1091	697	1057	550	1102	851	404462.5
206	-1055	-624	-629	-1197	1055	589	667	1206	879	426436.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.287	-.252	-0.	.287	.252	*0.000	.270

FOR APPLIED LOAD OF 545455.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	809	1822	1555		831	1823	1578		1411	545079.64
44	1381	1366	-445		1408	1406	396		1070	514950.00
86	98	1241	1678		367	1282	1762		1137	516198.00
122	439	1211	1462		409	1217	1447		1024	489631.33
164	1191	-1315	544		1188	1325	580		1031	443330.00
188	794	1535	-575	-1244	788	1183	610	1255	959	455525.0
206	-1180	-707	-708	-1365	1180	672	746	1374	993	481605.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.351	-.312	-0.	.350	.312	*0.000	.331

FOR APPLIED LOAD OF 598699.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	927	1999	1630		949	2000	1703		1551	599065.59
44	1536	1500	-498		1564	1540	449		1184	574401.67
86	133	1414	1881		402	1405	1965		1257	570829.31
122	465	1370	1606		435	1382	1591		1136	543008.00
164	1357	-1445	624		1354	1485	620		1153	495790.00
188	886	1666	-625	-1403	840	1314	660	1414	1067	506825.0
206	-1309	-770	-781	-1533	1309	741	819	1542	1103	534833.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.427	-.374	-0.	.427	.374	*0.000	.400

FOR APPLIED LOAD OF 647013.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1029	2144	1805		1051	2145	1828		1675	446784.89
44	1670	1610	-543		1698	1650	494		1281	421123.33
86	155	1519	2054		434	1510	2148		1364	419256.00
122	490	1532	1733		440	1538	1718		1239	592082.67
164	1514	-1619	659		1511	1629	655		1265	543950.00
188	970	1749	-670	-1554	964	1437	705	1545	1168	554681.2
206	-1431	-841	-849	-1696	1431	806	887	1705	1207	585516.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.508	-.452	-0.	.508	.452	0.	.480

FOR APPLIED LOAD OF 495313.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1140	2299	1930		1162	2300	1953		1805	696824.29
44	1817	1723	-597		1845	1763	548		1385	671886.67
86	199	1614	2266		468	1615	2350		1478	670860.67
122	506	1704	1856		476	1710	1841		1342	641635.33
164	1693	-1760	681		1690	1780	677		1382	594403.33
188	1052	1920	-705	-1744	1056	1568	740	1755	1280	607881.2
206	-1565	-890	-900	-1908	1565	861	938	1917	1320	640321.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.605	-.546	-0.	.605	.546	*0.567	.575

FOR APPLIED LOAD OF 750543.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1252	2463	2055		1274	2454	2078		1935	746724.46
44	1962	1833	-649		1990	1873	600		1488	721518.33
86	232	1712	2461		501	1713	2545		1586	720195.33
122	520	1888	1986		490	1894	1971		1452	693896.67
164	1891	-1922	693		1848	1942	649		1506	647123.33
188	1145	2041	-738	-1923	1139	1889	743	1934	1376	653718.7
206	-1582	-910	-913	-2102	1642	875	951	2111	1405	681303.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.728	-.659	-0.	.728	.659	.000	.694

FOR APPLIED LOAD OF 797871.20 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1381	2525	2185		1403	2626	2208		2079	801544.84
44	2130	1950	-706		2158	1990	657		1602	776808.33
86	263	1821	2699		532	1822	2783		1712	777399.33
122	525	2091	2099		495	2097	2084		1559	745042.67
164	2101	-2045	678		2098	2105	674		1626	699036.67
188	1225	2173	-701	-2133	1219	1821	736	2144	1480	703000.0
206	-1815	-922	-928	-2340	1815	887	966	2349	1504	729561.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.866	-.802	-0.	.866	.802	.000	.834

FOR APPLIED LOAD OF 850129.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1488	2774	2300		1510	2775	2323		2203	843559.39
44	2279	2054	-762		2307	2094	713		1705	826763.33
86	298	1922	2927		567	1923	3011		1834	832484.67
122	537	2235	2213		507	2301	2198		1669	797622.67
164	2308	-2251	673		2305	2271	669		1748	751783.33
188	1314	2317	-708	-2328	1298	1955	743	2339	1584	752281.2
206	-1960	-937	-957	-2539	1960	902	995	2548	1601	776606.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.035	-.969	-0.	1.035	.969	*2.000	1.002

FOR APPLIED LOAD OF 903373.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1609	2937	2438		1631	2938	2461		2343	901618.56
44	2447	2181	-821		2475	2201	772		1816	880760.00
86	324	1993	3171		593	1994	3255		1947	884089.33
122	527	2523	2303		497	2529	2288		1771	846697.33
164	2549	-2417	644		2546	2427	640		1871	804530.00
188	1400	2433	-670	-2572	1394	2081	705	2583	1691	803106.2
206	-2092	-924	-934	-2810	2092	889	972	2819	1693	821105.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.281	-1.211	-0.	1.281	1.211	.000	1.246

FOR APPLIED LOAD OF 954152.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1732	3099	2551		1754	3100	2574		2476	951814.85
44	2617	2229	-848		2645	2269	799		1904	923601.67
86	325	2038	3412		594	2039	3496		2043	927522.00
122	492	2728	2355		462	2734	2340		1845	882069.33
164	2785	-2568	598		2782	2578	594		1985	853406.67
188	1487	2569	-616	-2801	1481	2207	651	2812	1788	849181.2
206	-2226	-843	-908	-3061	2226	858	946	3070	1775	860875.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.687	-1.509	-0.	1.687	1.509	*4.897	1.598

FOR APPLIED LOAD OF 1001973.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1848	3241	2671		1870	3262	2694		2609	1001563.14
44	2746	2323	-897		2814	2363	848		2008	974041.67
86	346	2108	3667		615	2109	3751		2158	979883.33
122	467	2916	2437		437	2922	2422		1927	921106.00
164	3005	-2711	540		3002	2731	542		2092	899416.67
188	1579	2678	-554	-3034	1573	2326	589	3045	1883	894543.7
206	-2345	-834	-841	-3385	2345	819	879	3394	1859	901736.2

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.154	-2.154	-0.	2.154	2.154	.000	2.154

FOR APPLIED LOAD OF 1020707.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1892	3310	2733		1914	3317	2756		2662	1021812.33
44	2851	2345	-917		2879	2405	868		2051	994573.33
86	358	2133	3750		627	2194	3834		2218	1007123.33
122	477	2944	2554		447	2970	2539		1985	948989.33
164	3037	-2819	548		3034	2834	544		2137	919053.33
188	1621	2735	-543	-3116	1615	2383	578	3127	1926	914731.2
206	-2372	-847	-794	-3537	2372	812	832	3546	1890	916892.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.900	-2.793	-0.	2.900	2.793	*0.000	2.847

FOR APPLIED LOAD OF 1041906.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1940	3378	2807		1962	3377	2830		2723	1044222.02
44	2916	2420	-941		2944	2460	892		2099	1017853.33
86	362	2254	3819		631	2255	3903		2263	1027402.00
122	469	3010	2632		439	3016	2617		2024	967472.00
164	3077	-2915	528		3074	2925	524		2174	934963.33
188	1623	2795	-531	-3164	1622	2443	566	3175	1951	926962.5
206	-2424	-814	-777	-3599	2424	779	815	3608	1906	924652.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.235	-3.208	-0.	3.235	3.208	*0.000	3.221

FOR APPLIED LOAD OF 803294.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1514	2740	2357		1536	2741	2380		2219	854755.95
44	2361	2023	-671		2389	2063	622		1691	820296.67
86	76	1898	3225		345	1899	3309		1851	840354.00
122	229	2527	2237		199	2533	2222		1651	789337.33
164	2619	-2503	301		2616	2523	297		1812	779160.00
188	1343	2440	-366	-2758	1337	2134	401	2769	1660	788618.7
206	-2115	-670	-607	-3135	2115	571	645	3144	1619	795093.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.447	-3.358	-0.	3.447	3.358	*0.000	3.403

FOR APPLIED LOAD OF 597713.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)

0	1084	2094	1803		1146	2095	1826		1676	647169.31
44	1810	1540	-441		1838	1586	382		1269	615303.33
86	-150	1446	2598		119	1487	2682		1429	644917.33
122	29	2068	1794		-1	2014	1779		1264	604192.00
164	2133	-2039	85		2130	2059	81		1423	612033.33
188	1047	2118	-179	-2297	1041	1756	214	2308	1330	631631.2
206	-1729	-389	-398	-2607	1729	354	436	2616	1284	622618.7

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.256	-3.265	-0.	3.256	3.265	*0.000	3.260

FOR APPLIED LOAD OF 200848.20 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	345	768	509		368	769	592		576	222251.82
44	727	443	-121		755	523	72		450	216250.00
86	-350	490	1185		-121	491	1269		546	244035.33
122	-210	830	619		-236	836	604		401	191637.33
164	936	-740	-262		933	800	-266		489	210270.00
188	397	1064	204	-1074	391	712	-169	1085	505	239756.2
206	-672	42	93	-1233	672	-77	-55	1242	445	216067.5

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.856	-2.891	-0.	2.856	2.891	-.000	2.873

FOR APPLIED LOAD OF 3451.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-16	-3	-82		6	-2	-59		-18	-7037.05
44	44	-4	-42		112	36	-7		47	22795.00
86	-374	10	230		-105	31	314		80	36320.00
122	-148	105	18		-198	201	3		2	956.00
164	293	-104	-249		290	124	-293		40	17343.33
188	78	449	249	-330	72	97	-234	341	69	32775.0
206	-61	197	309	-425	61	-232	-271	434	-2	-970.0

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.418	-2.453	-0.	2.418	2.453	*0.000	2.436

TEST DATA: S3T1L1

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	0	-8	-14	-16	-0	-0	-0	-0	0	0.
36	-2	-1			-0	-0			0	0.
72	-2	0			-0	-0			0	0.
108	-1	-3			-0	-0			0	0.
144	-3	0			-0	-0			0	0.
180	-1	-1			-0	-0			0	0.
216	-2	0			-0	-0			0	0.
252	-4	-4			-0	-0			0	0.
276	-1	1			0	0			0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-0.	-0.	-0.	0.	*0.000	*5.680	0.

FOR APPLIED LOAD OF 23644.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-8	-24	-25	-33	8	16	11	17	13	23417.8
36	-14	-10			12	9			10	18745.83
72	-11	-13			9	13			11	19674.11
108	-8	-11			7	8			8	13241.57
144	-10	-7			7	7			7	12335.34
180	-6	-6			5	5			5	8743.25
216	-5	-4			4	4			4	6967.14
252	-6	-6			2	2			2	3455.75
276	0	0			1	-1			0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.003	-0.	-0.	.003	.000	.000	.003

FOR APPLIED LOAD OF 40863.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-12	-37	-35	-41	12	29	21	25	22	40337.4
36	-25	-14			23	13			18	32982.20
72	-14	-24			12	24			18	32982.20
108	-12	-19			11	16			13	24361.25
144	-16	-12			13	12			12	22477.38
180	-11	-10			10	9			10	16898.45
216	-9	-6			7	6			7	11432.40
252	-5	-7			2	3			3	4328.44
276	0	2			1	1			1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.006	-0.	-0.	.006	.000	.000	.006

FOR APPLIED LOAD OF 56540.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-18	-46	-45	-50	18	38	31	34	30	57529.4

36	-32	-20	30	19	24	45823.21
72	-20	-32	18	32	25	46828.78
108	-16	-24	15	21	18	32982.20
144	-21	-15	18	15	16	30083.00
180	-15	-12	14	11	12	22477.38
216	-11	-8	9	8	9	15063.65
252	-8	-8	4	4	4	6967.14
276	0	3	1	2	2	2586.54

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.008	-0.	-0.	.008	.000	*0.000	.008

FOR APPLIED LOAD OF 77357.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-27	-54	-57	-60	27	46	43	44	40	78022.0
36	-38	-31			36	30			33	63232.46
72	-30	-38			28	38			33	63232.46
108	-24	-30			23	27			25	46828.78
144	-26	-22			23	22			22	41825.69
180	-20	-16			19	15			17	31046.62
216	-14	-11			12	11			11	20605.50
252	-8	-8			4	4			4	6967.14
276	0	1			1	0			1	858.64

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.013	-0.	-0.	.013	*0.000	-.000	.013

FOR APPLIED LOAD OF 101772.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-33	-62	-71	-72	33	54	57	56	50	99727.2
36	-44	-45			42	44			43	84468.67
72	-46	-45			44	45			44	87713.98
108	-34	-36			33	33			33	63232.46
144	-33	-29			30	29			29	55985.36
180	-25	-21			24	20			22	40832.61
216	-17	-13			15	13			14	25307.63
252	-10	-9			6	5			6	9636.32
276	0	1			1	0			1	858.64

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.019	-0.	-0.	.019	-.000	-.000	.019

FOR APPLIED LOAD OF 120019.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-42	-68	-84	-81	42	60	70	65	59	120266.7
36	-48	-58			46	57			51	103031.78
72	-59	-49			57	49			53	106347.36
108	-43	-40			42	37			39	76953.57
144	-38	-35			35	35			35	67419.54
180	-29	-24			28	23			25	47836.77
216	-20	-16			18	16			17	31046.62
252	-11	-11			7	7			7	12335.36
276	0	2			1	1			1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG

-.025	-0.	-0.	.025	*0.000	-.000	.025

FOR APPLIED LOAD OF 137495.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-48	-74	-94	-90	48	66	80	74	67	137709.3
36	-52	-68			50	67			58	118588.35
72	-68	-54			66	54			60	121946.95
108	-49	-44			48	41			44	87713.98
144	-42	-40			39	40			39	76953.57
180	-32	-27			31	26			28	53934.42
216	-22	-17			20	17			18	33954.13
252	-12	-11			8	7			8	13241.57
276	0	1			1	0			1	858.64

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.030	-0.	-0.	.030	.000	.000	.030

FOR APPLIED LOAD OF 156256.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-53	-83	-107	-98	53	75	93	82	76	157545.5
36	-59	-78			57	77			67	137709.25
72	-78	-61			76	61			68	141102.04
108	-56	-50			55	47			51	101928.99
144	-48	-44			45	44			44	87713.98
180	-36	-30			35	29			32	61151.21
216	-24	-19			22	19			20	37868.84
252	-13	-11			9	7			8	14151.01
276	0	1			1	0			1	858.64

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.039	-0.	-0.	.039	*0.000	*6.000	.039

FOR APPLIED LOAD OF 167821.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-55	-87	-113	-102	55	79	99	86	80	166632.3
36	-62	-84			60	83			71	147898.95
72	-84	-65			82	65			73	152436.63
108	-60	-54			59	51			55	110784.13
144	-50	-47			47	47			47	93153.28
180	-39	-31			38	30			34	65321.97
216	-26	-20			24	20			22	40832.61
252	-13	-11			9	7			8	14151.01
276	0	2			1	1			1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.045	-0.	-0.	.045	.000	*2.318	.045

FOR APPLIED LOAD OF 178358.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-59	-92	-121	-108	59	84	107	92	85	179683.6
36	-66	-89			64	88			76	158113.39
72	-90	-69			88	69			78	163792.62
108	-63	-57			62	54			58	117470.59

144	-55	-49	52	49	50	100827.44
180	-42	-32	41	31	36	69525.00
216	-27	-21	25	21	23	42821.32
252	-13	-11	9	7	8	14151.01
276	0	2	1	1	1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.052	-0.	-0.	.052	*0.000	*8.680	.052

FOR APPLIED LOAD OF 189409.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-61	-97	-128	-112	61	89	114	96	90	189868.4
36	-68	-94			66	93			79	166064.38
72	-95	-72			93	72			82	172877.48
108	-66	-60			65	57			61	124190.20
144	-57	-50			54	50			52	104135.79
180	-44	-32			43	31			37	71638.16
216	-28	-21			26	21			23	43819.46
252	-13	-10			9	6			8	13241.57
276	0	2			1	1			1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.060	-0.	-0.	.060	*0.000	*0.000	.060

FOR APPLIED LOAD OF 198404.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-63	-101	-134	-116	63	93	120	100	94	198885.6
36	-72	-98			70	97			83	175147.18
72	-99	-76			97	76			86	181949.73
108	-68	-63			67	60			63	129811.67
144	-60	-52			57	52			54	109673.30
180	-45	-33			44	32			38	73758.84
216	-29	-21			27	21			24	44820.10
252	-13	-10			9	6			8	13241.57
276	1	2			2	1			2	2586.54

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.068	-0.	-0.	.068	-.000	-.000	.068

FOR APPLIED LOAD OF 209969.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-65	-105	-140	-121	65	97	126	105	98	208415.4
36	-76	-103			74	102			88	185346.20
72	-104	-81			102	81			91	193254.54
108	-71	-67			70	64			67	137709.25
144	-63	-52			60	52			56	113008.96
180	-46	-33			45	32			38	74821.95
216	-30	-21			28	21			24	45823.21
252	-13	-10			9	6			8	13241.57
276	1	2			2	1			2	2586.54

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.081	-0.	-0.	.081	*2.000	*0.000	.081

FOR APPLIED LOAD OF 218707.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-67	-110	-146	-124	67	102	132	108	102	217324.5
36	-78	-106			76	105			90	190997.71
72	-107	-84			105	84			94	200009.71
108	-72	-69			71	66			68	141102.04
144	-66	-52			63	52			57	116353.74
180	-48	-33			47	32			39	76953.57
216	-30	-20			28	20			24	44820.10
252	-14	-10			10	6			8	14151.01
276	0	2			1	1			1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.097	-0.	-0.	.097	-.000	*0.000	.097

FOR APPLIED LOAD OF 226417.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-69	-114	-154	-129	69	106	140	113	107	227811.7
36	-82	-112			80	111			95	202255.72
72	-111	-88			109	88			98	208974.06
108	-74	-73			73	70			71	147898.95
144	-69	-53			66	53			59	120826.55
180	-50	-32			49	31			40	78022.04
216	-32	-20			30	20			25	46828.78
252	-13	-10			9	6			8	13241.57
276	0	2			1	1			1	1720.83

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.125	-0.	-0.	.125	.000	.000	.125

FOR APPLIED LOAD OF 238496.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-71	-119	-161	-132	71	111	147	116	111	237095.0
36	-85	-115			83	114			98	208974.06
72	-114	-92			112	92			102	216769.59
108	-76	-75			75	72			73	152436.63
144	-71	-52			68	52			60	121946.95
180	-51	-31			50	30			40	78022.04
216	-33	-20			31	20			25	47836.77
252	-14	-9			10	5			8	13241.57
276	2	3			3	2			3	4328.44

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.200	-0.	-0.	.200	-.000	.000	.200

FOR APPLIED LOAD OF 245692.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-74	-122	-167	-138	74	114	153	122	116	246805.3
36	-88	-116			86	115			100	213434.71
72	-115	-93			113	93			103	218987.44
108	-74	-78			73	75			74	153571.64
144	-71	-49			68	49			58	118588.35
180	-54	-28			53	27			40	78022.04
216	-35	-18			33	18			25	47836.77

252	-14	-10			10	6		8	14151.01
276	2	4			3	3		3	5204.58

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.552	-0.	-0.	.552	*0.000	-.000	.552

FOR APPLIED LOAD OF 196862.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-56	-96	-137	-110	56	88	123	94	90	190433.1
36	-66	-84			64	83			73	152436.63
72	-78	-73			76	73			74	154706.85
108	-42	-70			41	67			54	108563.54
144	-68	-20			65	20			42	83390.09
180	-52	-16			51	15			33	63232.46
216	-33	-12			31	12			21	39842.09
252	-12	-11			8	7			8	13241.57
276	2	5			3	4			4	6084.16

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.070	-0.	-0.	1.070	*5.913	*0.000	1.070

FOR APPLIED LOAD OF 186582.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-54	-92	-133	-106	54	84	119	90	87	182516.1
36	-63	-80			61	79			70	144498.82
72	-74	-72			72	72			72	149032.97
108	-36	-70			35	67			51	101928.99
144	-70	-16			67	16			41	81237.82
180	-53	-13			52	12			32	61151.21
216	-32	-10			30	10			20	36886.16
252	-13	-11			9	7			8	14151.01
276	2	5			3	4			4	6084.16

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.240	-0.	-0.	1.240	.000	-.000	1.240

FOR APPLIED LOAD OF 178872.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-50	-88	-129	-103	50	80	115	87	83	174012.4
36	-60	-75			58	74			66	135449.90
72	-67	-70			65	70			67	138839.70
108	-29	-70			28	67			47	94245.50
144	-72	-9			69	9			39	75886.87
180	-54	-10			53	9			31	59078.38
216	-32	-9			30	9			19	35906.13
252	-12	-11			8	7			8	13241.57
276	2	5			3	4			4	6084.16

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.480	-0.	-0.	1.480	*0.000	*0.000	1.480

FOR APPLIED LOAD OF 169106.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)

0	-46	-83	-124	-96	46	75	110	80	78	162088.8
36	-57	-69			55	68			61	125313.02
72	-59	-68			57	68			62	127560.91
108	-21	-70			20	67			43	85548.87
144	-74	-2			71	2			36	70580.63
180	-55	-6			54	5			29	55985.36
216	-31	-6			29	6			17	32013.03
252	-12	-11			8	7			8	13241.57
276	2	6			3	5			4	6967.14

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.800	-0.	-0.	1.800	-.000	*0.000	1.800

FOR APPLIED LOAD OF 163452.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-46	-81	-122	-93	46	73	108	77	76	158113.4
36	-55	-66			53	65			59	119707.01
72	-55	-67			53	67			60	121946.95
108	-16	-70			15	67			41	80164.19
144	-76	2			73	-2			35	68471.30
180	-56	-4			55	3			29	54958.77
216	-31	-6			29	6			17	32013.03
252	-12	-11			8	7			8	13241.57
276	3	6			4	5			5	7853.51

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.030	-0.	-0.	2.030	.000	*0.000	2.030

FOR APPLIED LOAD OF 158055.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-40	-78	-119	-89	40	70	105	73	72	149033.0
36	-53	-62			51	61			56	113008.96
72	-50	-67			48	67			57	116353.74
108	-11	-70			10	67			38	74821.95
144	-79	8			76	-8			34	65321.97
180	-58	0			57	-1			28	52912.34
216	-32	-4			30	4			17	31046.62
252	-12	-12			8	8			8	14151.01
276	3	6			4	5			5	7853.51

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.320	-0.	-0.	2.320	*0.000	.000	2.320

FOR APPLIED LOAD OF 153943.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-42	-74	-118	-86	42	66	104	70	70	145631.9
36	-52	-59			50	58			54	108563.54
72	-45	-67			43	67			55	110784.13
108	-6	-71			5	68			36	70580.63
144	-83	14			80	-14			33	63232.46
180	-61	4			60	-5			27	51892.55
216	-33	-3			31	3			17	31046.62
252	-12	-12			8	8			8	14151.01
276	3	6			4	5			5	7853.51

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.620	-0.	-0.	2.620	.000	-.000	2.620

FOR APPLIED LOAD OF 148546.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-38	-72	-116	-82	38	64	102	66	67	138839.7
36	-49	-58			47	57			52	104135.79
72	-42	-65			40	65			52	105240.99
108	-2	-71			1	68			34	66369.76
144	-85	18			82	-18			32	61151.21
180	-62	6			61	-7			27	50875.09
216	-32	-2			30	2			16	29122.21
252	-12	-12			8	8			8	14151.01
276	3	7			4	6			5	8743.25

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.950	-0.	-0.	2.950	.000	*0.000	2.950

FOR APPLIED LOAD OF 143663.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-38	-69	-113	-79	38	61	99	63	65	133756.8
36	-47	-56			45	55			50	99727.16
72	-39	-64			37	64			50	100827.44
108	2	-72			-3	69			33	63232.46
144	-90	25			87	-25			31	59078.39
180	-64	9			63	-10			26	49859.94
216	-33	-1			31	1			16	29122.21
252	-13	-12			9	8			9	15063.65
276	4	6			5	5			5	8743.25

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.410	-0.	-0.	3.410	.000	-.000	3.410

FOR APPLIED LOAD OF 139037.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-32	-55	-112	-74	32	47	98	58	59	119147.4
36	-46	-53			44	52			48	95339.12
72	-35	-64			33	64			48	96434.12
108	8	-75			-9	72			31	60113.73
144	-96	33			93	-33			30	57014.18
180	-68	14			67	-15			26	48847.14
216	-34	0			32	-0			16	29122.21
252	-13	-13			9	9			9	15979.47
276	4	7			5	6			6	9636.32

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-4.070	-0.	-0.	4.070	*0.000	-.000	4.070

FOR APPLIED LOAD OF 134668.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-32	-60	-110	-66	32	52	96	50	57	116353.7
36	-43	-50			41	49			45	88798.84
72	-30	-64			28	64			46	90973.13

108	17	-81	-18	78	30	57014.18
144	-109	46	106	-46	30	57014.18
180	-74	19	73	-20	26	49859.94
216	-35	-3	33	3	18	32982.20
252	-15	-17	11	13	12	21539.93
276	7	8	8	7	8	13241.57

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.455	-0.	-0.	5.455	.000	.000	5.455

FOR APPLIED LOAD OF 117192.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-29	-55	-104	-61	29	47	90	45	53	105794.0
36	-41	-46			39	45			42	82313.13
72	-26	-62			24	62			43	84468.67
108	20	-79			-21	76			27	51892.55
144	-108	48			105	-48			28	53934.42
180	-73	21			72	-22			25	46828.78
216	-33	0			31	-0			15	28164.25
252	-14	-15			10	11			10	18745.80
276	6	8			7	7			7	12335.36

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.468	-0.	-0.	5.468	.000	*0.000	5.468

FOR APPLIED LOAD OF 97917.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-27	-51	-98	-57	27	43	84	41	49	96982.1
36	-38	-41			36	40			38	73758.84
72	-21	-58			19	58			38	74821.95
108	23	-77			-24	74			25	46828.78
144	-105	50			102	-50			26	48847.16
180	-71	24			70	-25			22	41825.69
216	-33	1			31	-1			15	27209.15
252	-13	-14			9	10			10	16898.45
276	6	7			7	6			7	11432.40

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.468	-0.	-0.	5.468	*0.000	-.000	5.468

FOR APPLIED LOAD OF 79670.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-17	-44	-84	-48	17	36	70	32	39	75354.2
36	-34	-30			32	29			30	58045.19
72	-10	-53			8	53			30	58045.19
108	32	-72			-33	69			18	32982.20
144	-101	-57			98	57			77	161520.81
180	-67	-28			66	27			46	92062.48
216	-30	4			28	-4			12	21539.93
252	-12	-13			8	9			9	15063.65
276	5	7			6	6			6	10532.71

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.461	-0.	-0.	5.461	*8.930	*0.000	5.461

FOR APPLIED LOAD OF 59367.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-8	-36	-69	-38	8	28	55	22	28	53423.1
36	-29	-16			27	15			21	38854.14
72	5	-48			-7	48			20	37868.84
108	41	-68			-42	65			11	20605.50
144	-95	64			92	-64			14	25307.63
180	-63	34			62	-35			13	24361.25
216	-28	8			26	-8			9	15979.47
252	-12	-11			8	7			8	13241.57
276	5	6			6	5			6	9636.32

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.455	-0.	-0.	5.455	-.000	.000	5.455

FOR APPLIED LOAD OF 39064.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1	-30	-52	-28	-1	22	38	12	18	32497.3
36	-25	-2			23	1			12	21539.93
72	20	-44			-22	44			11	19674.11
108	51	-63			-52	60			4	6967.14
144	-91	71			88	-71			9	15063.65
180	-60	40			59	-41			9	15979.47
216	-26	11			24	-11			7	11432.40
252	-11	-9			7	5			6	10532.71
276	4	6			5	5			5	8743.25

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.447	-0.	-0.	5.447	*0.000	.000	5.447

FOR APPLIED LOAD OF 19275.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	12	-24	-32	-23	-12	16	18	7	7	12788.1
36	-22	12			20	-13			4	6084.16
72	-35	-40			33	40			36	70580.63
108	61	-60			-62	57			-3	-4239.21
144	-86	79			83	-79			2	3455.75
180	-56	45			55	-46			5	7853.51
216	-23	14			21	-14			4	6084.16
252	-10	-8			6	4			5	8743.25
276	4	8			5	7			6	10532.71

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.439	-0.	-0.	5.439	-.000	-.000	5.439

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	17	-8	-10	-19	-17	-0	-4	3	-5	-7564.4
36	-9	17			7	-18			-6	-9204.47
72	41	-25			-43	25			-9	-14823.11
108	66	-50			-67	47			-10	-16392.96
144	-78	82			75	-82			-4	-5909.27
180	-51	49			50	-50			0	0.

216	-21	17		19	-17	1	1720.83
252	-10	-6		6	2	4	6967.14
276	3	6		4	5	5	7853.51

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-5.431	-0.	-0.	5.431	-.000	.000	5.431

TEST DATA: S3T1L2

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	16	-6	-6	-16	-0	-0	-0	-0	0	0.
36	-8	19			-0	-0			0	0.
72	42	-24			-0	-0			0	0.
108	66	-47			-0	-0			0	0.
144	-76	82			-0	-0			0	0.
180	-50	50			-0	-0			0	0.
216	-21	18			-0	-0			0	0.
252	-10	-5			-0	-0			0	0.
276	3	5			0	0			0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-0.	-0.	-0.	0.	*0.000	*5.680	0.

FOR APPLIED LOAD OF 18504.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	10	-16	-11	-30	6	10	5	14	9	17447.8
36	-16	12			8	7			8	14936.56
72	34	-32			8	8			8	15940.37
108	60	-53			6	6			6	11930.92
144	-81	78			5	4			5	8934.16
180	-54	46			4	4			4	7937.27
216	-23	16			2	2			2	3960.08
252	-10	-7			-0	2			1	1977.86
276	4	6			1	1			1	1977.86

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.003	-0.	-0.	.003	.000	.000	.003

FOR APPLIED LOAD OF 38550.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	5	-31	-18	-45	11	25	12	29	19	38756.9
36	-27	7			19	12			15	31105.35
72	28	-42			14	18			16	32123.08
108	55	-60			11	13			12	24004.05
144	-87	73			11	9			10	19964.96
180	-58	43			8	7			8	14936.56
216	-25	14			4	4			4	7937.27
252	-10	-8			-0	3			2	2968.43
276	4	6			1	1			1	1977.86

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.008	-0.	-0.	.008	.000	.000	.008

FOR APPLIED LOAD OF 58853.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)

0	-3	-38	-26	-60	19	32	20	44	29	58311.4
36	-32	-4			24	23			23	47477.20
72	16	-47			26	23			24	49535.87
108	47	-65			19	18			18	37223.25
144	-91	67			15	15			15	30088.42
180	-62	38			12	12			12	24004.05
216	-28	11			7	7			7	13933.71
252	-11	-5			1	-0			1	988.38
276	4	8			1	3			2	3960.08

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.013	-0.	-0.	.013	.000	*0.000	.013

FOR APPLIED LOAD OF 78899.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-11	-48	-35	-73	27	42	29	57	39	79097.3
36	-37	-16			29	35			32	65047.89
72	3	-52			39	28			33	68163.70
108	38	-70			28	23			25	51596.98
144	-95	61			19	21			20	40292.22
180	-65	34			15	16			15	31105.35
216	-30	8			9	10			10	18957.43
252	-12	-10			2	5			4	6941.40
276	5	6			2	1			2	2968.43

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.018	-0.	-0.	.018	*0.000	-.000	.018

FOR APPLIED LOAD OF 99459.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-19	-57	-46	-85	35	51	40	69	49	100010.2
36	-43	-27			35	46			40	82750.22
72	-8	-58			50	34			42	85884.04
108	30	-75			36	28			32	65047.89
144	-99	54			23	28			25	51596.98
180	-68	29			18	21			19	39268.51
216	-31	6			10	12			11	21982.73
252	-12	-11			2	6			4	7937.27
276	4	5			1	0			1	988.38

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.025	-0.	-0.	.025	-.000	-.000	.025

FOR APPLIED LOAD OF 120533.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-26	-65	-57	-96	42	59	51	80	58	119396.5
36	-48	-36			40	55			47	97391.93
72	-19	-64			61	40			50	103676.88
108	22	-80			44	33			38	78575.79
144	-104	48			28	34			31	62972.95
180	-72	22			22	28			25	50566.12
216	-33	2			12	16			14	28056.97
252	-13	-14			3	9			6	11930.92
276	6	7			3	2			3	4952.80

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.062	-0.	-0.	.062	*0.000	-.000	.062

FOR APPLIED LOAD OF 126187.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-28	-70	-62	-100	44	64	56	84	62	127775.5
36	-51	-40			43	59			51	104724.70
72	-22	-66			64	42			53	108916.55
108	20	-82			46	35			40	82750.22
144	-106	47			30	35			32	66086.05
180	-72	19			22	31			26	53660.44
216	-34	-2			13	20			16	33141.59
252	-15	-17			5	12			9	16945.12
276	8	8			5	3			4	7937.27

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.210	-0.	-0.	.210	.000	.000	.210

FOR APPLIED LOAD OF 135439.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-33	-72	-70	-101	49	66	64	85	66	136144.3
36	-54	-44			46	63			54	112060.74
72	-26	-70			68	46			57	117300.82
108	20	-88			46	41			43	89020.12
144	-115	49			39	33			36	73365.07
180	-76	16			26	34			30	60899.91
216	-34	-10			13	28			20	41316.62
252	-16	-23			6	18			12	24004.05
276	11	12			8	7			8	14936.56

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.917	-0.	-0.	.917	*0.000	*6.000	.917

FOR APPLIED LOAD OF 129271.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-31	-68	-71	-94	47	62	65	78	63	129868.8
36	-52	-42			44	61			52	107868.52
72	-24	-70			66	46			56	115204.88
108	21	-90			45	43			44	90065.93
144	-119	52			43	30			36	74406.51
180	-77	15			27	35			31	62972.95
216	-32	-13			11	31			21	42341.72
252	-13	-17			3	12			8	14936.56
276	13	13			10	8			9	17950.81

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.200	-0.	-0.	1.200	.000	*2.318	1.200

FOR APPLIED LOAD OF 135953.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-35	-69	-78	-94	51	63	72	78	66	136144.3

36	-54	-47	46	66	56	115204.88
72	-28	-73	70	49	59	122539.49
108	21	-96	45	49	47	96344.86
144	-125	49	49	33	41	83794.56
180	-73	6	28	44	36	73365.07
216	-31	-25	10	43	26	53660.44
252	-21	-32	11	27	19	38245.52
276	18	16	15	11	13	26028.82

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.950	-0.	-0.	1.950	*0.000	*3.680	1.950

FOR APPLIED LOAD OF 141350.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-36	-71	-82	-96	52	65	76	80	68	140845.3
36	-55	-50			47	69			58	119396.53
72	-32	-76			74	52			63	129868.85
108	18	-99			48	52			50	102629.14
144	-128	46			52	36			44	90065.93
180	-79	2			29	48			38	78575.79
216	-32	-31			11	49			30	60899.91
252	-23	-36			13	31			22	44393.94
276	21	16			18	11			14	29072.29

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.340	-0.	-0.	2.340	*0.000	*0.000	2.340

FOR APPLIED LOAD OF 147261.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-39	-73	-87	-99	55	67	81	83	71	147625.2
36	-58	-54			50	73			61	126728.57
72	-36	-78			78	54			66	136144.31
108	15	-102			51	55			53	108916.55
144	-132	44			56	38			47	96344.86
180	-82	-2			32	52			42	85884.04
216	-34	-37			13	55			34	69203.17
252	-27	-41			17	36			26	53660.44
276	25	20			22	15			18	37223.25

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.690	-0.	-0.	2.690	-.000	-.000	2.690

FOR APPLIED LOAD OF 153686.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-41	-75	-91	-102	57	69	85	86	74	153350.6
36	-59	-58			51	77			64	131961.49
72	-40	-80			82	56			69	142411.11
108	12	-105			54	58			56	115204.88
144	-136	41			60	41			50	103676.88
180	-84	-6			34	56			45	92158.18
216	-37	-40			16	58			37	75448.31
252	-30	-44			20	39			29	59864.13
276	27	22			24	17			20	41316.62

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-2.990	-0.	-0.	2.990	*2.000	*0.000	2.990

FOR APPLIED LOAD OF 157798.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-44	-76	-93	-103	60	70	87	87	76	156987.6
36	-60	-60			52	79			65	135098.94
72	-44	-82			86	58			72	148667.06
108	10	-106			56	59			57	118348.71
144	-138	40			62	42			52	106820.53
180	-86	-8			36	58			47	96344.86
216	-33	-43			17	61			39	79618.94
252	-32	-46			22	41			31	64010.19
276	29	23			26	18			22	44393.94

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.150	-0.	-0.	3.150	-.000	*0.000	3.150

FOR APPLIED LOAD OF 167564.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-48	-80	-99	-108	64	74	93	92	81	166830.8
36	-64	-66			56	85			70	145540.58
72	-50	-56			92	62			77	159063.49
108	5	-111			61	64			62	128822.25
144	-144	36			68	46			57	117300.82
180	-91	-14			41	64			52	107868.52
216	-43	-49			22	67			44	91111.96
252	-38	-51			28	46			37	75448.31
276	34	30			31	25			28	56759.86

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.590	-0.	-0.	3.590	.000	.000	3.590

FOR APPLIED LOAD OF 172704.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-49	-82	-103	-110	65	76	97	94	83	171476.9
36	-66	-69			58	88			73	150749.58
72	-53	-88			95	64			79	164244.89
108	3	-115			63	68			65	135098.94
144	-148	34			72	48			60	123586.95
180	-95	-17			45	67			56	115204.88
216	-46	-52			25	70			47	97391.93
252	-40	-54			30	49			39	80662.40
276	37	32			34	27			30	61936.18

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.840	-0.	-0.	3.840	-.000	.000	3.840

FOR APPLIED LOAD OF 176816.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-52	-83	-106	-112	68	77	100	96	85	176111.0
36	-67	-72			59	91			75	154909.93

72	-56	-90	98	66	82	169413.37
108	1	-116	65	69	67	138234.31
144	-150	32	74	50	62	127775.49
180	-96	-19	46	69	57	118348.71
216	-48	-54	27	72	49	101581.48
252	-43	-56	33	51	42	85884.04
276	37	36	34	31	32	66086.05

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-4.080	-0.	-0.	4.080	*0.000	-.000	4.080

FOR APPLIED LOAD OF 182213.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-54	-85	-109	-114	70	79	103	98	87	180732.3
36	-70	-74			62	93			77	160100.74
72	-59	-93			101	69			85	175596.71
108	-1	-120			67	73			70	144497.74
144	-155	31			79	51			65	134053.34
180	-99	-22			49	72			60	124634.29
216	-51	-58			30	76			53	108916.55
252	-46	-60			36	55			45	93204.59
276	41	38			38	33			35	72324.01

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-4.420	-0.	-0.	4.420	*5.913	*0.000	4.420

FOR APPLIED LOAD OF 180928.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-55	-86	-112	-116	71	80	106	100	89	184317.1
36	-72	-76			64	95			79	164244.89
72	-60	-97			102	73			87	180732.27
108	0	-124			66	77			71	147625.25
144	-160	33			84	49			66	137189.44
180	-102	-22			52	72			62	127775.49
216	-52	-58			31	76			53	109964.60
252	-46	-60			36	55			45	93204.59
276	41	38			38	33			35	72324.01

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-4.870	-0.	-0.	4.870	.000	-.000	4.870

FOR APPLIED LOAD OF 257.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	16	0	-6	-14	-0	-6	-0	-2	-2	-3942.3
36	-19	14			11	5			8	15940.37
72	37	-46			5	22			13	27042.48
108	63	-78			3	31			17	34160.87
144	-120	80			44	2			23	46448.80
180	-74	25			24	25			24	49535.87
216	-32	-24			11	42			26	53660.44
252	-31	-36			21	31			26	52628.42
276	24	26			21	21			21	42341.72

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG

-4.796	-0.	-0.	4.796	+0.000	+0.000	4.796

TEST DATA: S3TIL3

FOR APPLIED LOAD OF 0. LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	15	3	-4	-12	-0	-0	-0	-0	0	0.
36	-14	16			-0	-0			0	0.
72	39	-45			-0	-0			0	0.
108	65	-78			-0	-0			0	0.
144	-117	82			-0	-0			0	0.
180	-73	27			-0	-0			0	0.
216	-31	-22			-0	-0			0	0.
252	-29	-36			-0	-0			0	0.
270	23	65	29		0	0	0		0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-0.	-0.	-0.	0.	*0.000	*5.680	0.

FOR APPLIED LOAD OF 20046.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	9	-4	-13	-22	7	7	9	10	8	16423.4
36	-24	6			6	10			8	18069.47
72	29	-50			10	5			8	15959.65
108	53	-83			7	5			6	13815.13
144	-121	77			4	5			5	10247.64
180	-75	23			3	4			4	7989.47
216	-33	-24			2	2			2	4582.02
252	-30	-36			1	-0			1	1149.73
270	23	65	29		0	0	0		0	0.

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.003	-0.	-0.	.003	.000	.000	.003

FOR APPLIED LOAD OF 39044.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	5	-19	-19	-37	11	22	15	25	18	40312.2
36	-34	1			16	15			15	34434.45
72	23	-60			16	15			15	34434.45
108	53	-90			12	12			12	26861.25
144	-127	73			10	9			10	21394.21
180	-80	20			7	7			7	15847.34
216	-36	-25			5	3			4	9119.81
252	-31	-38			2	2			2	4582.02
270	24	65	29		1	0	1		1	1532.34

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.007	-0.	-0.	.007	.000	.000	.007

FOR APPLIED LOAD OF 59110.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	*	-27	-28	-50	12	30	24	38	26	56570.4

36	-34	-10			21	20			23	51371.8[illegible]
72	12	-65			27	20			23	51371.8[illegible]
108	[illegible]	-95			19	17			18	3978[illegible].42
144	-131	67			14	15			14	32281.5[illegible]
180	-83	15			10	12			11	24677.41
216	-34	-28			7	6			7	14732.5[illegible]
252	-32	-39			3	3			3	6655.37
276	20	65	20		2	1	1		1	3059.66

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.013	-.	-0.	.013	.009	-0.000	.014

FOR APPLIED LOAD OF 91479.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVG	LOAD (LBS)
0	-12	-37	-4[illegible]	-53	28	40	36	51	39	82531.[illegible]
36	-45	-22			28	38			33	70925.25
72	9	-72			39	27			33	70925.25
108	37	-100			28	22			25	54495.9[illegible]
144	-135	61			19	21			19	42964.0[illegible]
180	-46	9			13	16			15	34434.45
216	-4[illegible]	-31			9	9			9	20281.72
252	-33	-40			4	4			4	9119.83
276	26	67	27		3	2	2		2	5341.36

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.019	-0.	-0.	.019	-0.000	-.000	.019

FOR APPLIED LOAD OF 101253.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVG	LOAD (LBS)
0	-21	-46	-51	-76	36	49	47	63	49	102434.[illegible]
36	-52	-32			34	48			41	87036.15
72	-12	-78			51	33			42	89032.6[illegible]
108	29	-105			36	28			32	66891.05
144	-139	55			22	27			24	53456.2[illegible]
180	-59	5			16	22			19	41904.7[illegible]
216	-42	-34			11	12			11	25770.4[illegible]
252	-35	-42			6	6			6	13615.1[illegible]
276	27	67	27		4	2	2		3	6099.47

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.026	-0.	-0.	.026	-.000	-.000	.026

FOR APPLIED LOAD OF 113991.00 LB TIP LOAD = 0. LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVG	LOAD (LBS)
0	-27	-55	-61	-85	43	59	57	73	58	120179.[illegible]
36	-58	-41			40	57			48	101939.9[illegible]
72	-21	-94			60	39			49	103917.0[illegible]
108	23	-111			42	33			37	80020.4[illegible]
144	-142	51			25	31			28	60700.61
180	-51	0			18	27			22	49280.66
216	-44	-37			13	15			14	31201.[illegible]
252	-35	-44			5	8			7	15847.3[illegible]
276	29	68	28		6	3	3		4	9119.8[illegible]

SGZ1 SGZ2 SGZ3 STT1 STT2 STT3 AVG

-.034	-0.	-0.	.034	*1.000	-.000	.034

FOR APPLIED LOAD OF 137238.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-32	-64	-71	-96	43	67	67	84	66	137419.6
36	-64	-49			46	65			55	115749.76
72	-36	-89			69	44			56	117718.73
108	19	-115			47	37			41	88034.73
144	-145	47			26	35			31	67672.03
180	-51	-4			18	31			24	53456.26
216	-45	-39			14	17			15	34434.45
252	-37	-40			8	10			9	20281.72
276	31	70	29		4	5	4		6	12663.85

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.045	-0.	-0.	.045	.000	.000	.045

FOR APPLIED LOAD OF 153312.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-39	-73	-81	-108	55	75	77	93	75	154780.3
36	-69	-54			51	70			60	125592.72
72	-35	-95			75	50			62	129531.33
108	13	-120			52	42			47	98970.57
144	-149	41			32	41			36	76007.05
180	-56	-19			23	37			30	64805.95
216	-39	-45			18	23			20	45975.35
252	-41	-51			12	15			13	30120.03
276	35	73	32		12	8	7		9	20281.72

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.086	-0.	-0.	.086	*0.000	*5.001	.086

FOR APPLIED LOAD OF 176559.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-47	-89	-95	-118	63	89	91	106	87	179024.5
36	-78	-64			60	80			70	144342.12
72	-46	-105			85	61			73	150297.37
108	8	-130			57	52			54	113786.23
144	-159	35			42	47			44	94010.11
180	-105	-18			32	45			38	82029.65
216	-55	-54			24	32			28	60700.61
252	-48	-59			19	23			21	46130.61
276	41	79	38		18	14	13		15	33359.05

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.292	-0.	-0.	.292	.000	*2.314	.292

FOR APPLIED LOAD OF 197633.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-50	-94	-107	-124	66	97	103	114	95	195091.9
36	-88	-70			70	86			78	160282.29
72	-51	-118			90	73			81	167327.13
108	5	-144			60	66			63	130516.42

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVG	LOAD (LBS)
144	-176	35			59	40			52	109833.64
180	-114	-24			41	51			46	95998.24
216	-82	-64			31	42			36	78007.05
252	-55	-64			27	32			29	63782.51
276	45	86	44		22	21	19		21	45428.34

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-1.190	-0.	-0.	1.190	*1.000	*6.000	1.190

FOR APPLIED LOAD OF 194175.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVG	LOAD (LBS)
0	-55	-92	-120	-121	71	95	116	109	98	200891.7
36	-92	-74			74	90			82	168337.84
72	-48	-128			47	83			85	174427.16
108	17	-163			48	85			66	137419.63
144	-230	50			83	32			57	119687.31
180	-124	-24			51	51			51	106079.45
216	-69	-63			34	45			42	89032.61
252	-51	-71			32	35			33	71940.43
276	45	90	47		22	25	22		23	50327.16

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.572	-0.	-0.	3.572	*1.000	*0.000	3.572

FOR APPLIED LOAD OF 2[illegible]7.00 LB TIP LOAD = 0. LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVG	LOAD (LBS)
0	17	5	-5	-16	-1	-2	1	-2	-1	-2308.0
36	-27	13			9	3			6	13615.13
72	43	-52			-4	17			7	14732.54
108	73	-144			-13	25			7	14732.54
144	-151	95			34	-13			10	23582.03
180	-83	30			15	-3			6	13615.13
216	-37	-24			8	2			5	11372.76
252	-35	-35			6	2			4	9119.85
276	13	67	29		-5	2	4		0	766.85

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-3.355	-0.	-0.	3.355	-.000	-.000	3.355

TEST DATA: S4T1

FOR APPLIED LOAD OF 0.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-130	-67	-35	-21	-0	-0	-0	-0	0	0.0
46	-9	-5			-0	-0			0	0.00
94	0	-17			-0	-0			0	0.00
142	-19	-9			-0	-0			0	0.00
190	-20	-17			-0	-0			0	0.00
238	-6	0			-0	-0			0	0.00
286	-2	-9			-0	-0			0	0.00
334	-8	7			-0	0			0	0.00
381	15	0			0	0			0	0.00
429	1	-31			0	0			0	0.00
477	0	2			0	0			0	0.00
513	-16	-13			0	0			0	0.00
533	28	-10			0	-0			0	0.00
533	-13	-20	-11		-0	-0	-0		0	0.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.806	1.900	-0.000	0.000	0.000	.000	0.000

FOR APPLIED LOAD OF 15060.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-265	-110	-62	-107	135	43	27	86	73	15873.1
46	-30	-83			71	78			49	13464.00
94	-80	-41			80	24			52	14144.00
142	-81	-48			62	39			50	12271.50
190	-72	-86			52	69			60	12221.00
238	-45	-40			39	40			39	9638.00
286	-43	-40			41	31			36	8892.00
334	-30	30			22	23			23	5557.50
381	36	26			21	26			23	5804.50
429	17	-12			16	19			18	4322.50
477	10	16			10	14			12	2964.00
513	-6	-2			10	11			10	2593.50
533	33	-27			5	17			11	2717.00
533	-25	-26	-23		12	6	12		10	2470.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.804	1.899	-0.000	.002	.001	.000	.001

FOR APPLIED LOAD OF 34386.60 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-380	-210	-86	-255	250	143	51	234	169	36642.0
46	-73	-165			64	160			112	30464.00
94	-157	-107			157	90			123	33592.00
142	-156	-116			137	107			122	29646.00
190	-142	-185			122	168			145	29290.00
238	-100	-101			94	101			98	23790.00
286	-83	-96			81	87			84	20748.00
334	-70	76			62	69			65	16178.50
381	68	57			53	57			55	13585.00

429	42	17		41	48		44	10991.50
477	32	36		32	34		33	8151.00
513	6	15		22	28		25	6175.00
533	38	-43		10	33		21	5310.50
533	-37	-33	-38	24	13	27	21	5269.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.802	1.897	-0.000	.004	.003	-.000	.003

FOR APPLIED LOAD OF 58750.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-502	-317	-107	-417	372	250	72	396	272	58354.5
46	-115	-250			106	245			175	47736.00
94	-240	-170			240	153			196	53448.00
142	-240	-190			221	181			201	48843.00
190	-217	-290			197	273			235	47470.00
238	-157	-167			151	167			159	38796.00
286	-136	-150			134	141			138	33962.50
334	-108	121			100	114			107	26429.00
381	100	93			85	93			89	21983.00
429	71	50			70	81			75	18648.50
477	58	61			58	59			58	14449.50
513	20	36			36	49			43	10497.50
533	46	-57			18	47			33	8027.50
533	-47	-39	-52		34	19	41		31	7739.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.800	1.894	-0.000	.006	.006	-.000	.006

FOR APPLIED LOAD OF 81109.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-648	-408	-120	-586	518	341	85	565	377	80049.1
46	-152	-352			143	347			245	66640.00
94	-337	-232			337	215			276	75072.00
142	-330	-260			311	251			281	68283.00
190	-296	-408			276	391			333	67367.00
238	-217	-237			211	237			224	54656.00
286	-188	-210			186	201			193	47794.50
334	-150	168			142	161			151	37420.50
381	141	131			126	131			128	31739.50
429	100	87			99	118			108	26799.50
477	82	87			82	85			83	20624.50
513	39	56			55	69			62	15314.00
533	52	-76			24	66			45	11115.00
533	-59	-48	-68		46	28	57		44	10785.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.797	1.892	-0.000	.009	.008	-.000	.008

FOR APPLIED LOAD OF 98019.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-787	-500	-146	-703	657	433	111	682	471	99113.3
46	-190	-445			181	440			310	84456.00
94	-430	-293			430	276			353	96016.00
142	-423	-328			404	319			361	87844.50
190	-373	-518			353	501			427	86254.00

238	-277	-307		271	307		289	70516.00
286	-239	-273		237	264		250	61873.50
334	-192	216		184	209		196	48535.50
381	178	169		163	169		166	41002.00
429	132	125		131	156		143	35444.50
477	109	115		109	113		111	27417.00
513	56	79		72	92		82	20254.00
533	58	-91		30	81		55	13708.50
533	-71	-55	-82	68	35	71	55	13502.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.794	1.890	-0.000	.012	.010	-.000	.011

FOR APPLIED LOAD OF 125056.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-832	-611	-170	-841	702	544	135	820	550	115119.9
46	-227	-535			218	530			374	101728.00
94	-517	-352			517	335			426	115872.00
142	-510	-399			401	390			440	107041.50
190	-449	-628			429	611			520	105040.00
238	-330	-378			324	378			351	85644.00
286	-290	-333			288	324			306	75582.00
334	-235	263			227	256			241	59650.50
381	216	208			201	208			204	50511.50
429	162	162			161	193			177	43719.00
477	135	103			135	101			118	29146.00
513	73	102			89	115			102	25194.00
533	63	-109			35	99			67	16549.00
533	-83	-63	-97		76	43	86		66	16384.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.791	1.887	-0.000	.015	.013	-.000	.014

FOR APPLIED LOAD OF 140167.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1068	-717	-202	-1031	938	650	167	1010	691	143100.8
46	-261	-612			252	607			429	116824.00
94	-595	-403			505	386			490	133416.00
142	-598	-462			579	453			516	125388.00
190	-510	-719			490	702			596	120392.00
238	-383	-441			377	441			409	99796.00
286	-340	-387			338	378			358	88426.00
334	-273	309			265	302			283	70024.50
381	251	246			236	246			241	59527.00
429	192	200			191	231			211	52117.00
477	161	170			161	168			164	40631.50
513	88	123			104	136			120	29640.00
533	67	-125			39	115			77	19019.00
533	-92	-73	-111		79	53	100		77	19101.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.789	1.885	-0.000	.017	.015	-.000	.016

FOR APPLIED LOAD OF 173166.60 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1259	-787	-249	-1237	1129	720	214	1216	820	168209.1

46	-323	-700		314	695		504	137224.00
94	-719	-503		719	486		602	163880.00
142	-720	-563		701	554		627	152482.50
190	-628	-871		608	854		731	147662.00
238	-469	-550		463	550		506	123586.00
286	-419	-480		417	471		444	109668.00
334	-338	379		330	372		351	86697.00
381	306	302		291	302		296	73235.50
429	236	258		235	289		262	64714.00
477	200	213		200	211		205	50758.50
513	110	150		126	163		144	35691.50
533	76	-151		48	141		94	23341.50
533	-108	-85	-130	95	65	119	93	22971.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.784	1.881	-0.000	.022	.019	-.000	.020

FOR APPLIED LOAD OF 180928.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1330	-846	-263	-1330	1200	779	228	1309	879	179679.4
46	-341	-788			332	783			557	151640.00
94	-760	-543			760	526			643	174896.00
142	-765	-598			746	589			667	162202.50
190	-670	-927			650	910			780	157560.00
238	-501	-595			495	595			545	132980.00
286	-448	-520			446	511			478	118189.50
334	-366	407			358	400			379	93613.00
381	327	325			312	325			318	78669.50
429	253	281			252	312			282	69654.00
477	210	231			210	229			219	54216.50
513	120	170			136	183			159	39396.50
533	77	-163			49	153			101	24947.00
533	-112	-90	-141		99	70	130		100	24617.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.782	1.879	-0.000	.024	.021	.000	.023

FOR APPLIED LOAD OF 200819.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1467	-1078	-298	-1445	1337	1011	263	1424	1009	204602.7
46	-385	-860			376	855			615	167416.00
94	-836	-609			836	592			714	194208.00
142	-839	-665			820	656			738	179334.00
190	-740	-1019			720	1002			861	173922.00
238	-553	-665			547	665			606	147864.00
286	-499	-582			497	573			535	132145.00
334	-409	455			401	448			424	104851.50
381	360	365			345	365			355	87685.00
429	280	322			279	353			316	78052.00
477	241	262			241	260			250	61873.50
513	133	190			149	203			176	43472.00
533	83	-183			55	173			114	28158.00
533	-123	-100	-156		110	80	145		112	27581.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.779	1.876	-0.000	.027	.024	.000	.025

FOR APPLIED LOAD OF 217473.40 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1578	-1187	-320	-1562	1448	1120	285	1541	1098	221714.1
46	-422	-933			413	928			670	182376.00
94	-901	-670			901	653			777	211344.00
142	-905	-728			886	719			802	195007.50
190	-806	-1100			786	1083			934	198769.00
238	-601	-733			595	733			664	162016.00
286	-506	-640			504	631			567	140172.50
334	-451	502			443	495			469	115843.00
381	401	400			386	400			393	97071.00
429	315	360			314	391			352	87067.50
477	268	290			268	288			278	68666.00
513	150	217			146	230			198	48906.00
533	87	-202			59	192			125	30998.50
533	-133	-108	-168		120	88	157		122	30051.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.777	1.873	-0.000	.029	.027	-.000	.028

FOR APPLIED LOAD OF 238084.80 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1703	-1316	-355	-1690	1573	1249	320	1669	1203	241492.4
46	-467	-1010			458	1005			731	198968.00
94	-970	-756			970	739			854	232424.00
142	-982	-801			963	792			877	213232.50
190	-883	-1205			863	1188			1025	267151.00
238	-659	-813			653	813			733	178852.00
286	-602	-712			600	703			651	160920.50
334	-500	556			492	549			520	128563.50
381	443	449			428	449			438	108309.50
429	350	405			349	436			392	96947.50
477	299	331			299	329			314	77558.00
513	167	246			183	259			221	54587.00
533	90	-225			62	215			138	34209.50
533	-147	-119	-187		134	99	176		136	33674.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.773	1.869	-0.000	.033	.031	-.000	.032

FOR APPLIED LOAD OF 260803.60 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1800	-1459	-387	-1800	1670	1392	352	1779	1298	259547.2
46	-517	-1100			508	1095			801	218008.00
94	-1050	-807			1050	790			920	250240.00
142	-1060	-883			1041	874			957	232672.50
190	-970	-1310			950	1293			1121	226543.00
238	-723	-903			717	903			810	197640.00
286	-667	-790			665	781			723	178581.00
334	-558	616			550	609			579	143136.50
381	490	500			475	500			488	120412.50
429	388	458			387	489			438	108186.00
477	330	370			330	368			349	86203.00
513	186	278			202	291			246	60885.50
533	101	-250			73	240			156	38655.50
533	-162	-130	-209		149	110	198		152	37626.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.769	1.865	-0.000	.037	.035	-.000	.036

FOR APPLIED LOAD OF 278485.20 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1967	-1580	-410	-1969	1837	1513	375	1948	1418	282190.8
46	-562	-1186			553	1181			867	235824.00
94	-1120	-930			1120	913			1016	276488.00
142	-1120	-955			1101	946			1023	248710.50
190	-1040	-1405			1020	1388			1204	243208.00
238	-778	-983			772	983			877	214110.00
286	-723	-868			721	859			790	195130.00
334	-610	671			602	664			633	156351.00
381	533	546			518	546			532	131404.00
429	425	509			424	540			482	119054.00
477	368	415			368	413			390	96453.50
513	205	310			221	323			272	67184.00
533	107	-280			79	270			174	43101.50
533	-170	-147	-228		167	127	217		167	41249.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.764	1.861	-0.000	.042	.039	-.000	.040

FOR APPLIED LOAD OF 298068.60 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2070	-1693	-436	-2079	1940	1626	401	2058	1506	298794.5
46	-602	-1256			593	1251			922	250784.00
94	-1180	-1000			1180	983			1081	294168.00
142	-1156	-1015			1137	1006			1071	260374.50
190	-1109	-1485			1089	1468			1278	258257.00
238	-826	-1055			820	1055			938	228750.00
286	-772	-935			770	926			848	209456.00
334	-657	718			649	711			680	167960.00
381	571	589			556	589			572	141407.50
429	458	553			457	584			520	128563.50
477	397	450			397	448			422	104357.50
513	220	339			236	352			294	72618.00
533	113	-305			85	295			190	46930.00
533	-187	-159	-245		174	139	234		182	45036.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.760	1.856	-0.000	.046	.044	-.000	.045

FOR APPLIED LOAD OF 318114.60 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2203	-1820	-462	-2210	2073	1753	437	2189	1610	318494.9
46	-649	-1339			640	1334			987	268464.00
94	-1250	-1090			1250	1073			1161	315928.00
142	-1198	-1101			1179	1092			1135	275926.50
190	-1186	-1567			1166	1550			1358	274316.00
238	-880	-1139			874	1139			1006	245586.00
286	-836	-1016			834	1007			920	227363.50
334	-712	772			704	765			734	181421.50
381	617	641			602	641			621	153510.50
429	498	609			497	640			568	140419.50
477	435	509			435	507			471	116337.00

513	248	382		264	395		329	81386.50
533	120	-339		92	329		210	51993.50
533	-205	-178	-273	192	158	262	204	50388.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.754	1.851	-0.000	.052	.049	-.000	.050

FOR APPLIED LOAD OF 340576.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2300	-1962	-490	-2309	2170	1895	455	2288	1702	335839.8
46	-699	-1427			690	1422			1056	287232.00
94	-1325	-1191			1325	1174			1249	339864.00
142	-1230	-1166			1211	1157			1184	287712.00
190	-1262	-1625			1242	1608			1425	287850.00
238	-933	-1220			927	1220			1073	261934.00
286	-885	-1099			883	1090			986	243665.50
334	-765	829			757	822			789	195006.50
381	681	706			666	706			686	169442.00
429	553	681			552	712			632	156104.00
477	487	573			487	571			529	130663.00
513	273	432			289	445			367	90649.00
533	131	-383			103	373			238	58786.00
533	-228	-199	-303		215	179	292		229	56480.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.747	1.844	-0.000	.059	.056	.000	.057

FOR APPLIED LOAD OF 359851.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2462	-2080	-517	-2470	2332	2013	482	2449	1819	358131.6
46	-742	-1500			733	1495			1114	303008.00
94	-1387	-1277			1387	1260			1323	359992.00
142	-1275	-1232			1256	1223			1239	301198.50
190	-1329	-1702			1309	1685			1497	362394.00
238	-975	-1302			969	1302			1135	277062.00
286	-930	-1173			928	1164			1046	258362.00
334	-813	880			805	873			839	207233.00
381	743	763			728	763			745	184138.50
429	609	746			608	777			692	171047.50
477	537	640			537	638			588	145112.50
513	302	488			318	501			409	101146.50
533	142	-429			114	419			266	65825.50
533	-253	-225	-336		240	205	325		257	63396.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.739	1.836	-0.000	.067	.064	.000	.066

FOR APPLIED LOAD OF 388686.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2601	-2256	-556	-2652	2471	2189	521	2631	1953	383877.9
46	-809	-1616			800	1611			1205	327896.00
94	-1476	-1405			1476	1388			1432	389504.00
142	-1333	-1328			1314	1319			1316	319909.50
190	-1429	-1809			1409	1792			1600	323301.00
238	-1039	-1419			1033	1419			1226	299144.00
286	-1007	-1283			1005	1274			1139	291456.50

334	-885	963		877	956		916	226375.50
381	820	845		805	845		825	203775.00
429	687	836		686	867		776	191795.50
477	608	736		608	734		671	165737.00
513	343	567		359	580		469	115966.50
533	156	-501		128	491		309	76446.50
533	-293	-266	-386	280	246	375	300	74182.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.726	1.823	-0.000	.080	.077	*0.000	.078

FOR APPLIED LOAD OF 400303.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2703	-2357	-580	-2769	2573	2290	545	2748	2039	400556.2
46	-852	-1692			843	1687			1265	344080.00
94	-1537	-1490			1537	1473			1505	409360.00
142	-1379	-1405			1360	1396			1378	334854.00
190	-1498	-1887			1478	1870			1674	338148.00
238	-1080	-1508			1074	1508			1291	315004.00
286	-1060	-1369			1068	1360			1209	258623.00
334	-943	1023			935	1016			975	240948.50
381	888	911			873	911			892	220324.00
429	749	908			748	939			843	208344.50
477	661	812			661	810			735	181668.50
513	373	632			389	645			517	127699.00
533	167	-559			139	549			344	84968.00
533	-320	-301	-420		307	281	409		332	82086.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.715	1.812	-0.000	.091	.088	*.000	.089

FOR APPLIED LOAD OF 420297.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2902	-2509	-620	-2970	2772	2442	585	2949	2187	429607.2
46	-925	-1811			916	1806			1361	370152.00
94	-1626	-1627			1626	1610			1618	440096.00
142	-1419	-1481			1400	1472			1436	348948.00
190	-1603	-1980			1583	1963			1773	358146.00
238	-1142	-1628			1136	1628			1382	337208.00
286	-1130	-1480			1128	1471			1299	320976.50
334	-1020	1100			1012	1093			1052	259967.50
381	969	995			954	995			974	240701.50
429	830	1003			829	1034			931	230080.50
477	733	923			733	921			827	204269.00
513	416	728			432	741			586	144865.50
533	180	-603			182	593			372	92007.50
533	-372	-355	-478		359	335	467		387	95589.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.696	1.794	-0.000	.110	.106	*0.435	.108

FOR APPLIED LOAD OF 440292.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3017	-2619	-631	-3039	2887	2552	596	3018	2263	444774.2
46	-952	-1853			943	1848			1395	379576.00
94	-1649	-1680			1649	1663			1656	450432.00

142	-1450	-1528		1431	1519		1475	358425.00
190	-1642	-2010		1622	1993		1807	365115.00
238	-1160	-1687		1154	1687		1420	346602.00
286	-1167	-1543		1165	1534		1349	333326.50
334	-1068	1141		1060	1134		1097	270959.00
381	1019	1049		1004	1049		1026	253545.50
429	879	1066		878	1097		988	243912.50
477	770	990		770	988		879	217113.00
513	442	789		458	802		630	155610.00
533	195	-698		167	688		427	105592.50
533	-406	-395	-516	393	375	505	424	104810.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.679	1.776	-0.000	.127	.124	*0.000	.125

FOR APPLIED LOAD OF 460338.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3132	-2725	-649	-3150	3002	2658	614	3129	2351	462369.6
46	-992	-1921			983	1916			1449	394264.00
94	-1698	-1763			1698	1746			1722	468384.00
142	-1470	-1578			1451	1569			1510	366930.00
190	-1708	-2070			1688	2053			1870	377841.00
238	-1200	-1770			1194	1770			1482	361608.00
286	-1215	-1622			1213	1613			1413	349011.00
334	-1130	1192			1122	1185			1153	284914.50
381	1077	1111			1062	1111			1086	268365.50
429	935	1138			934	1169			1051	259720.50
477	821	1080			821	1078			949	234526.50
513	470	866			486	879			682	168577.50
533	210	-763			182	753			467	115472.50
533	-448	-446	-562		435	426	551		471	116254.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.656	1.753	-0.000	.150	.147	*0.000	.148

FOR APPLIED LOAD OF 480384.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3208	-2805	-660	-3209	3078	2738	625	3188	2407	473848.8
46	-1026	-1970			1017	1965			1491	405552.00
94	-1733	-1823			1733	1806			1769	481304.00
142	-1476	-1599			1457	1590			1523	370210.50
190	-1747	-2098			1727	2081			1904	384608.00
238	-1222	-1821			1216	1821			1518	370514.00
286	-1242	-1680			1240	1671			1455	359508.50
334	-1176	1228			1168	1221			1194	295041.50
381	1123	1159			1108	1159			1133	279974.50
429	976	1196			975	1227			1101	271947.00
477	851	1150			851	1148			999	246876.50
513	495	926			511	939			725	179075.00
533	230	-815			262	805			503	124364.50
533	-483	-409	-598		470	389	587		482	119054.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.632	1.730	-0.000	.174	.170	*0.000	.172

FOR APPLIED LOAD OF 496575.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3339	-2916	-680	-3301	3209	2849	645	3280	2496	492030.4
46	-1063	-2031			1054	2026			1540	418880.00
94	-1773	-1890			1773	1873			1823	495856.00
142	-1516	-1656			1497	1647			1572	381996.00
190	-1801	-2138			1781	2121			1951	394102.00
238	-1250	-1895			1244	1895			1569	382958.00
286	-1299	-1763			1297	1754			1525	376798.50
334	-1241	1280			1233	1273			1253	309491.00
381	1186	1229			1171	1229			1200	296400.00
429	1030	1283			1029	1314			1171	289360.50
477	895	1253			895	1251			1073	265031.00
513	522	1022			538	1035			786	194265.50
533	250	-896			222	886			554	136838.00
533	-532	-549	-655		519	529	644		564	139308.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.603	1.700	-0.000	.203	.200	*8.125	.201

FOR APPLIED LOAD OF 520373.60 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3478	-3055	-716	-3501	3348	2988	681	3480	2624	518905.9
46	-1126	-2100			1117	2095			1606	436832.00
94	-1850	-1990			1850	1973			1911	519928.00
142	-1566	-1730			1547	1721			1634	397062.00
190	-1901	-2220			1881	2203			2042	412484.00
238	-1312	-1991			1306	1991			1648	402234.00
286	-1383	-1863			1381	1854			1617	399522.50
334	-1317	1357			1309	1350			1329	328386.50
381	1258	1310			1243	1310			1276	315295.50
429	1101	1381			1100	1412			1256	310232.00
477	948	1366			948	1364			1156	285532.00
513	558	1126			574	1139			856	211555.50
533	285	-987			257	977			617	152399.00
533	-589	-619	-720		576	599	709		628	155116.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.544	1.643	-0.000	.262	.257	*0.000	.259

FOR APPLIED LOAD OF 540419.60 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3659	-3210	-743	-3671	3529	3143	708	3650	2757	547434.1
46	-1187	-2200			1178	2195			1686	458728.00
94	-1933	-2088			1933	2071			2002	544544.00
142	-1561	-1752			1542	1743			1642	399127.50
190	-1973	-2283			1953	2266			2109	426119.00
238	-1367	-2075			1361	2075			1718	419192.00
286	-1427	-1951			1425	1942			1683	415824.50
334	-1385	1426			1377	1419			1398	345306.00
381	1320	1388			1305	1388			1346	332585.50
429	1160	1467			1159	1498			1328	328139.50
477	990	1462			990	1460			1225	302575.00
513	601	1208			617	1221			919	226993.00
533	296	-1076			268	1066			667	164749.00
533	-629	-681	-808		616	661	797		691	170759.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.461	1.560	-0.000	.345	.340	.000	.342

FOR APPLIED LOAD OF 560414.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3708	-3280	-738	-3700	3578	3213	703	3679	2793	855211.6
46	-1200	-2289			1191	2284			1737	472600.00
94	-1970	-2107			1970	2090			2030	552160.00
142	-1600	-1800			1581	1791			1686	459698.00
190	-1998	-2277			1978	2260			2119	428038.00
238	-1386	-2111			1380	2111			1745	425902.00
286	-1502	-2040			1500	2031			1765	436078.50
334	-1431	1478			1493	1471			1447	357409.00
381	1377	1445			1362	1445			1403	346664.50
429	1220	1531			1219	1562			1390	343453.50
477	1050	1523			1050	1521			1285	317518.50
513	656	1266			672	1279			975	240948.50
533	351	-1140			393	1130			726	179445.50
533	-706	-730	-881		693	710	870		758	187143.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.357	1.458	-0.000	.449	.442	.000	.445

FOR APPLIED LOAD OF 580408.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3851	-3409	-771	-3899	3741	3342	736	3878	2929	885313.0
46	-1257	-2399			1248	2394			1821	495312.00
94	-2060	-2184			2060	2167			2113	574872.00
142	-1641	-1857			1622	1848			1735	471605.00
190	-2106	-2360			2086	2343			2214	447329.00
238	-1461	-2193			1455	2193			1824	445056.00
286	-1595	-2069			1593	2060			1826	451145.50
334	-1490	1549			1482	1542			1512	373464.00
381	1446	1534			1431	1534			1482	366177.50
429	1297	1642			1296	1673			1484	366671.50
477	1109	1649			1109	1647			1378	340366.00
513	727	1413			743	1426			1084	267871.50
533	465	-1251			437	1241			839	207233.00
533	-776	-828	-997		743	808	986		852	210526.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.216	1.319	-0.000	.590	.581	*0.000	.585

FOR APPLIED LOAD OF 600454.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-4025	-3506	-782	-4001	3895	3439	747	3980	3015	804793.9
46	-1287	-2473			1278	2468			1873	509456.00
94	-2117	-2212			2117	2195			2156	586432.00
142	-1673	-1927			1654	1918			1786	485998.00
190	-2164	-2368			2144	2351			2247	483995.00
238	-1495	-2237			1489	2237			1863	454572.00
286	-1692	-2151			1690	2142			1916	473252.00
334	-1569	1627			1561	1620			1590	392853.50
381	1516	1604			1501	1604			1552	383467.50
429	1346	1722			1345	1753			1549	382603.00
477	1133	1735			1133	1733			1433	353951.00
513	773	1512			789	1525			1157	285779.00
533	543	-1320			515	1310			913	225387.50

533	-881	-880	-1090		868	860	1079		936	231109.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.017	1.121	-0.000	.789	.779	.000	.784

FOR APPLIED LOAD OF 620449.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-4204	-3637	-822	-4194	4074	3570	787	4173	3151	636303.6
46	-1346	-2627			1337	2622			1979	528424.00
94	-2245	-2276			2245	2259			2252	612544.00
142	-1699	-2007			1680	1998			1839	446877.00
190	-2326	-2397			2306	2380			2343	473286.00
238	-1587	-2286			1581	2286			1933	471774.00
286	-1845	-2209			1843	2200			2021	469310.50
334	-1651	1726			1643	1719			1681	415207.00
381	1606	1708			1591	1708			1649	407426.50
429	1419	1849			1418	1880			1649	407303.00
477	1152	1888			1152	1886			1519	375193.00
513	829	1694			845	1707			1276	315172.00
533	647	-1450			619	1440			1029	254286.50
533	-1003	-972	-1237		990	952	1226		1056	260832.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.665	.779	-0.000	1.141	1.121	*0.000	1.131

FOR APPLIED LOAD OF 640495.40 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-4404	-3704	-84	-4310	4274	3637	49	4289	3062	615595.2
46	-1357	-2774			1348	2769			2058	559912.00
94	-2371	-2271			2371	2254			2313	629000.00
142	-1752	-2041			1733	2032			1882	457447.50
190	-2552	-2419			2532	2402			2467	498334.00
238	-1715	-2270			1709	2270			1989	485438.00
286	-2038	-2194			2036	2185			2110	521293.50
334	-1741	1831			1733	1824			1778	439289.50
381	1683	1819			1668	1819			1743	430644.50
429	1478	1979			1477	2010			1743	430644.50
477	1139	2052			1139	2050			1594	393841.50
513	853	1896			869	1909			1389	343083.00
533	733	-1582			705	1572			1138	281209.50
533	-1128	-1053	-1373		1115	1033	1362		1170	288990.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.070	.084	-0.000	1.876	1.816	.000	1.846

FOR APPLIED LOAD OF 600454.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-4211	-3456	-702	-4050	4081	3389	667	4029	3041	610812.7
46	-1220	-2617			1211	2612			1911	519928.00
94	-2222	-2050			2222	2033			2127	578680.00
142	-1548	-1855			1529	1846			1688	410062.50
190	-2418	-2105			2398	2088			2243	453086.00
238	-1622	-2081			1616	2081			1848	451034.00
286	-1863	-2059			1861	2050			1955	483008.50
334	-1604	1760			1586	1753			1674	413601.50
381	1561	1742			1546	1742			1644	406068.00

429	1362	1890		1361	1921		1641	405327.00
477	1009	1963		1009	1961		1485	366795.00
513	750	1795		766	1808		1287	317889.00
533	667	-1455		639	1445		1042	257374.00
533	-1037	-957	-1239	1024	937	1228	1063	262561.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.110	.043	-0.000	1.916	1.857	*0.000	1.886

FOR APPLIED LOAD OF 550442.60 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-4126	-3387	-666	-3967	3906	3320	631	3946	2973	595235.0
46	-1187	-2558			1178	2553			1865	507416.00
94	-2165	-2005			2165	1988			2076	564808.00
142	-1506	-1819			1487	1810			1648	448585.50
190	-2363	-2035			2343	2018			2180	440461.00
238	-1582	-2036			1576	2036			1806	440664.00
286	-1820	-2030			1818	2021			1919	474116.50
334	-1575	1723			1567	1716			1641	405450.50
381	1526	1710			1511	1710			1610	397793.50
429	1323	1859			1322	1890			1606	396682.00
477	972	1931			972	1929			1450	358273.50
513	691	1757			767	1770			1238	305909.50
533	639	-1409			611	1399			1005	248235.00
533	-1002	-925	-1194		989	905	1183		1026	253339.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.113	.040	-0.000	1.919	1.860	.000	1.889

FOR APPLIED LOAD OF 500379.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3958	-3234	-569	-3859	3828	3167	534	3838	2842	665850.9
46	-1119	-2439			1110	2434			1772	481984.00
94	-2053	-1910			2053	1893			1973	536656.00
142	-1414	-1737			1395	1728			1561	379444.50
190	-2258	-1897			2238	1880			2059	415918.00
238	-1508	-1948			1502	1948			1725	420900.00
286	-1747	-1957			1745	1948			1846	456085.50
334	-1519	1656			1511	1649			1580	390260.00
381	1471	1653			1456	1653			1554	383961.50
429	1271	1801			1270	1832			1551	383097.00
477	924	1883			924	1881			1402	346417.50
513	682	1700			698	1713			1205	297758.50
533	606	-1360			578	1350			964	238108.00
533	-963	-892	-1143		950	872	1132		985	243212.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.111	.041	-0.000	1.917	1.859	*0.000	1.888

FOR APPLIED LOAD OF 450366.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3679	-2986	-472	-3579	3549	2919	437	3558	2616	517109.7
46	-1004	-2230			995	2225			1610	437920.00
94	-1862	-1737			1862	1720			1791	487152.00
142	-1340	-1576			1321	1567			1444	350892.00
190	-2069	-1650			2049	1633			1841	371882.00

238	-1378	-1791			1372	1791			1581	385886.00
286	-1622	-1819			1620	1810			1715	423605.00
334	-1415	1541			1407	1534			1470	363213.50
381	1381	1555			1366	1555			1460	360743.50
429	1192	1704			1191	1735			1463	361361.00
477	855	1814			855	1812			1333	329374.50
513	635	1632			651	1645			1148	283556.00
533	573	-1297			545	1287			916	226252.00
533	-918	-858	-1079		905	838	1068		937	231439.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.105	.048	-0.000	1.911	1.852	*0.000	1.881

FOR APPLIED LOAD OF 400303.20 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3392	-2723	-398	-3285	3262	2656	363	3264	2386	469870.9
46	-888	-2016			879	2011			1445	353040.00
94	-1670	-1554			1670	1537			1603	436152.00
142	-1067	-1407			1048	1398			1223	297189.00
190	-1874	-1395			1854	1378			1616	326432.00
238	-1246	-1632			1240	1632			1436	350384.00
286	-1493	-1675			1401	1666			1578	389889.50
334	-1309	1423			1301	1416			1358	335549.50
381	1295	1453			1280	1453			1366	337525.50
429	1112	1603			1111	1634			1372	339007.50
477	787	1743			787	1741			1264	312208.00
513	586	1565			682	1578			1090	269230.00
533	545	-1239			517	1229			873	215631.00
533	-877	-825	-1019		864	805	1008		892	220406.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.096	.055	-0.000	1.902	1.845	.000	1.873

FOR APPLIED LOAD OF 350291.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-3146	-2489	-341	-3030	3016	2422	306	3009	2188	429854.7
46	-789	-1829			780	1824			1302	354144.00
94	-1504	-1391			1504	1374			1439	391408.00
142	-923	-1258			904	1249			1076	261589.50
190	-1704	-1174			1684	1157			1420	286941.00
238	-1131	-1492			1125	1492			1308	319274.00
286	-1381	-1546			1379	1537			1458	360126.00
334	-1213	1318			1205	1311			1258	310726.00
381	1208	1362			1193	1362			1277	315542.50
429	1042	1511			1041	1542			1291	319000.50
477	727	1676			727	1674			1200	296523.50
513	546	1507			562	1520			1041	257127.00
533	520	-1190			402	1180			836	206492.00
533	-843	-797	-971		830	777	960		856	211349.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-0.000	-0.000	-0.000	1.806	1.900	*0.000	1.853

FOR APPLIED LOAD OF 303619.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2816	-2274	-281	-2694	2696	2207	246	2673	1953	383877.9

46	-666	-1586		657	1581		1119	304368.00
94	-1291	-1185		1291	1168		1229	334424.00
142	-749	-1067		730	1058		894	217242.00
190	-1487	-892		1467	875		1171	236542.00
238	-986	-1313		980	1313		1146	279746.00
286	-1236	-1380		1234	1371		1302	321717.50
334	-1089	1182		1081	1175		1128	278616.00
381	1103	1243		1088	1243		1165	287878.50
429	952	1392		951	1423		1187	293189.00
477	649	1588		649	1586		1117	276022.50
513	492	1435		508	1448		978	241566.00
533	492	-1129		464	1119		791	195500.50
533	-800	-761	-908	787	741	897	808	199658.33

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.077	.072	-0.000	1.883	1.838	*0.000	1.855

FOR APPLIED LOAD OF 253916.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2502	-1910	-236	-2376	2372	1843	201	2355	1693	334083.3
46	-555	-1358			546	1353			949	258264.00
94	-1093	-993			1093	976			1034	281384.00
142	-606	-892			587	883			735	178605.00
190	-1283	-635			1263	618			940	189981.00
238	-852	-1143			846	1143			994	242658.00
286	-1101	-1223			1099	1214			1156	285655.50
334	-970	1052			962	1045			1003	247864.50
381	1003	1128			988	1128			1058	261326.00
429	866	1274			865	1305			1085	267995.00
477	575	1501			575	1499			1037	256139.00
513	444	1363			460	1376			918	226746.00
533	462	-1072			434	1062			748	184756.00
533	-759	-727	-850		746	707	839		764	188708.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.066	.085	-0.000	1.872	1.815	.000	1.843

FOR APPLIED LOAD OF 207244.80 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-2203	-1641	-196	-2061	2073	1574	161	2040	1462	290444.0
46	-450	-1143			441	1138			789	214744.00
94	-914	-815			914	798			856	232832.00
142	-474	-710			455	701			578	140454.00
190	-1092	-413			1072	396			734	148268.00
238	-729	-985			723	985			854	208376.00
286	-963	-1073			961	1064			1012	250087.50
334	-859	930			851	923			887	219089.00
381	905	1017			890	1017			953	235514.50
429	782	1163			781	1194			988	243912.50
477	503	1414			503	1412			957	236502.50
513	395	1293			411	1306			858	212049.50
533	435	-1017			407	1007			707	174629.00
533	-721	-693	-792		708	673	781		721	178004.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.056	.094	-0.000	1.862	1.806	*0.000	1.834

FOR APPLIED LOAD OF 156513.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1870	-1389	-149	-1721	1740	1322	114	1700	1219	244568.1
46	-338	-910			329	905			617	167824.00
94	-722	-618			722	601			661	179928.00
142	-389	-546			370	537			453	110200.50
190	-884	-213			864	196			530	107060.00
238	-604	-815			598	815			706	172386.00
286	-836	-912			834	903			868	214519.50
334	-737	797			729	790			759	187596.50
381	798	897			783	857			840	207480.00
429	690	1039			689	1070			879	217236.50
477	422	1317			422	1315			868	214519.50
513	342	1217			358	1230			794	196118.00
533	406	-961			378	951			664	164131.50
533	-682	-655	-735		669	635	724		676	166972.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.044	.105	-0.000	1.850	1.795	*0.000	1.822

FOR APPLIED LOAD OF 106757.80 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1572	-1034	-167	-1326	1442	967	132	1305	961	195554.7
46	-232	-669			223	664			443	120632.00
94	-525	-432			525	415			470	127840.00
142	-312	-373			293	364			328	79825.50
190	-670	-75			660	58			354	71508.00
238	-481	-641			475	641			558	136152.00
286	-693	-723			691	714			702	173517.50
334	-609	660			661	653			627	154869.00
381	684	768			669	768			718	177469.50
429	592	907			591	938			764	188831.50
477	334	1207			334	1205			769	190066.50
513	284	1133			300	1146			723	178581.00
533	377	-900			349	890			619	153016.50
533	-689	-613	-671		676	593	660		643	158821.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.030	.119	-0.000	1.836	1.781	.000	1.808

FOR APPLIED LOAD OF 56642.80 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-1035	-756	-51	-919	965	689	16	898	627	130411.4
46	-145	-388			136	383			259	70584.00
94	-282	-308			282	291			286	77928.00
142	-220	-233			201	224			213	51637.50
190	-459	-7			439	-10			214	43329.00
238	-352	-464			346	464			405	98820.00
286	-545	-574			543	565			554	136838.00
334	-482	575			474	568			521	128687.00
381	568	635			553	635			594	146718.00
429	491	767			490	798			644	159068.00
477	243	1091			243	1089			666	164502.00
513	220	1045			236	1058			647	159809.00
533	346	-841			318	831			574	141901.50
533	-667	-567	-600		654	547	589		597	147376.67

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
-.014	.132	-0.000	1.820	1.768	*0.000	1.794

FOR APPLIED LOAD OF 257.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	-478	-284	-9	-229	348	217	-26	208	187	40306.1
46	-9	-96			-0	91			45	12376.00
94	-52	-60			52	43			48	12920.00
142	-45	-30			26	21			23	5710.50
190	-184	108			164	-125			19	3939.00
238	-183	-208			177	208			192	46970.00
286	-348	-331			346	322			334	82498.00
334	-304	307			296	300			298	73606.00
381	406	436			391	436			413	102134.50
429	351	554			350	585			467	115472.50
477	121	916			121	914			517	127822.50
513	136	912			152	925			538	133009.50
533	294	-759			246	749			507	125352.50
533	-642	-495	-506		629	475	495		533	131651.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.010	.155	-0.000	1.796	1.745	*0.000	1.770

TEST DATA: S4T2

FOR APPLIED LOAD OF 0.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	42	19	-1	17	0	0	0	0	0	0.0
46	7	29			0	0			0	0.00
94	49	0			0	0			0	0.00
142	50	4			0	0			0	0.00
190	33	46			0	0			0	0.00
238	32	35			0	0			0	0.00
286	36	35			0	0			0	0.00
334	31	36			0	0			0	0.00
381	30	33			0	0			0	0.00
429	413	2325			0	0			0	0.00
477	626	250			0	0			0	0.00
513	-1463	937			0	0			0	0.00
533	8	6188			0	0			0	0.00
533	1029	-472	685		0	0	0		0	0.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
2.001	2.004	-0.000	0.000	0.000	.000	0.000

FOR APPLIED LOAD OF 104000.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	351	208	57	221	309	189	58	204	190	102016.3
46	73	182			66	153			109	93403.50
94	187	109			138	109			123	105345.50
142	169	121			139	117			128	97536.00
190	161	203			128	157			142	90345.00
238	123	135			91	100			95	73057.50
286	116	122			80	87			83	64629.00
334	94	108			63	72			68	52245.00
381	87	94			57	61			59	45666.00
429	462	2384			49	59			54	41796.00
477	670	292			44	42			43	33282.00
513	-1431	972			32	35			33	25929.00
533	24	6210			16	22			19	14706.00
533	1057	-457	714		28	15	29		24	18576.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.989	1.994	-0.000	.012	.010	.000	.011

FOR APPLIED LOAD OF 208000.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	628	361	102	435	586	342	103	418	362	280705.5
46	132	347			125	318			221	171939.50
94	336	213			287	213			250	213250.00
142	332	236			282	232			257	199834.00
190	289	365			256	319			288	223275.00
238	212	241			180	206			193	149645.00
286	200	215			164	180			172	133128.00
334	164	187			133	151			142	109908.00
381	150	165			120	132			126	97524.00

429	516	2451		163	126		114	88623.00
477	721	342		95	92		93	72369.00
513	-1396	1011		67	74		70	54567.00
533	41	6235		33	47		40	30960.00
533	1093	-440	747	64	32	62	53	40764.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.969	1.979	-0.000	.032	.025	-.000	.029

FOR APPLIED LOAD OF 312000.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	887	513	147	626	845	494	148	609	524	313528.9
46	199	506			192	477			334	285328.50
94	468	326			419	326			372	317742.50
142	415	351			365	347			356	271272.00
190	424	491			391	445			418	265012.00
238	292	353			260	318			289	221085.00
286	289	317			253	282			267	207045.00
334	241	273			210	237			223	172989.00
381	219	241			189	208			198	153639.00
429	576	2530			163	205			184	142416.00
477	776	400			150	150			150	116100.00
513	-1357	1056			106	119			113	87075.00
533	61	6263			53	75			64	49536.00
533	1132	-418	784		103	54	99		85	66048.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.948	1.961	-0.000	.053	.043	-.000	.048

FOR APPLIED LOAD OF 416000.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1141	666	193	811	1099	647	194	794	683	415981.7
46	268	671			261	642			451	385129.50
94	607	443			558	443			500	426926.50
142	495	465			445	461			453	345186.00
190	566	623			543	577			555	351870.00
238	382	479			350	444			397	303705.00
286	391	432			355	397			376	291024.00
334	332	371			301	335			318	246132.00
381	299	330			269	297			283	219042.00
429	649	2623			236	298			267	206658.00
477	838	469			232	219			215	166797.00
513	-1312	1103			151	166			158	122679.00
533	87	6297			79	109			94	72756.00
533	1178	-389	831		149	83	146		126	97524.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.922	1.939	-0.000	.079	.065	-.000	.072

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1329	775	229	943	1287	756	230	926	800	485697.5
46	318	789			371	760			535	456781.50
94	708	517			659	517			588	501564.00
142	541	538			491	534			513	390525.00
190	666	706			643	660			646	469881.00

238	452	565		420	530		475	363375.00
286	473	519		437	484		460	356427.00
334	402	445		371	409		390	301860.00
381	369	401		339	368		353	273609.00
429	711	2697		298	372		335	259290.00
477	889	537		263	287		275	212850.00
513	-1260	1173		203	236		219	169893.00
533	133	6350		125	162		143	111069.00
533	1249	-336	903	220	136	218	191	148092.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.871	1.893	-0.000	.130	.111	-.000	.120

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1503	851	284	1055	1461	832	285	1038	904	542631.9
46	366	916			359	887			623	531419.00
94	816	566			767	566			666	568524.50
142	599	590			549	586			567	432435.00
190	753	798			720	752			736	466624.00
238	524	658			492	623			557	426487.50
286	560	608			534	573			548	424539.00
334	477	526			446	490			468	362232.00
381	444	488			414	455			434	336303.00
429	782	2792			369	467			418	323532.00
477	946	644			320	394			357	276318.00
513	-1184	1279			279	342			310	240327.00
533	205	6442			197	254			225	174537.00
533	1348	-254	1001		319	218	316		284	220074.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.635	1.690	-0.000	.366	.314	-.000	.340

FOR APPLIED LOAD OF 613600.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1846	974	358	1134	1864	955	359	1117	1059	613551.2
46	413	1054			406	1025			715	610321.50
94	885	607			836	607			721	615439.50
142	652	656			602	652			627	477774.00
190	882	863			849	817			833	528122.00
238	609	730			577	695			636	486540.00
286	701	650			665	615			640	495360.00
334	537	643			506	607			556	430731.00
381	518	600			488	567			527	408285.00
429	854	2906			441	581			511	395514.00
477	998	759			372	509			440	340947.00
513	-1122	1421			341	484			413	319275.00
533	284	6538			276	350			313	242262.00
533	1457	-170	1122		428	302	437		389	301086.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.661	.708	-0.000	1.340	1.296	-.000	1.318

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1342	779	229	948	1300	760	230	931	805	488850.2

46	319	794		312	765		538	459340.50
94	713	516		664	516		590	503270.00
142	544	537		404	533		513	391287.00
190	669	711		636	665		650	412417.00
238	456	572		424	537		480	367582.50
286	477	526		441	491		466	360684.00
334	407	451		376	415		395	306117.00
381	375	408		345	375		360	278640.00
429	718	2704		365	379		342	264708.00
477	893	548		267	298		282	218655.00
513	-1253	1189		210	252		231	178794.00
533	141	6360		133	172		152	118035.00
533	1260	-326	915	231	146	230	202	156606.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.827	1.850	-0.000	.174	.154	-.000	.164

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1348	785	230	956	1306	766	231	939	810	491845.4
46	322	800			315	771			543	463179.00
94	718	516			669	516			592	505402.50
142	547	536			407	532			514	392049.00
190	672	715			639	669			654	414636.00
238	456	578			454	543			483	369877.50
286	480	532			444	497			470	364167.00
334	412	454			381	418			399	309213.00
381	379	414			349	381			365	282510.00
429	722	2711			369	386			347	268965.00
477	895	558			269	308			288	223259.00
513	-1248	1200			215	263			239	184986.00
533	146	6368			138	180			159	123066.00
533	1267	-318	923		238	154	238		210	162540.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.789	1.813	-0.000	.212	.191	.000	.202

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1366	796	240	972	1324	777	241	955	824	499623.0
46	334	814			327	785			556	474268.00
94	733	527			684	527			605	516491.50
142	561	546			511	542			526	401193.00
190	685	730			652	684			668	423512.00
238	470	590			438	555			496	379822.50
286	494	545			458	510			484	374616.00
334	426	467			395	431			413	319662.00
381	391	427			361	394			377	292185.00
429	724	2716			311	391			351	271674.00
477	895	564			269	314			291	225621.00
513	-1245	1202			218	265			241	186921.00
533	148	6374			140	186			163	126162.00
533	1270	-315	926		241	157	241		213	164862.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.767	1.792	-0.000	.234	.212	.000	.223

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1356	782	230	962	1314	763	231	945	813	493408.7
46	322	807			315	778			546	466164.50
94	725	515			676	515			595	507961.50
142	550	536			560	532			516	393192.00
190	674	720			641	674			657	416855.00
238	460	580			428	545			486	372172.50
286	483	536			447	501			474	366876.00
334	415	457			384	421			402	311535.00
381	382	418			352	385			368	285219.00
429	721	2716			368	391			349	270513.00
477	893	564			267	314			290	224847.00
513	-1246	1203			217	266			241	186921.00
533	146	6374			138	186			162	125388.00
533	1271	-314	924		242	158	239		213	164862.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.754	1.780	-0.000	.247	.254	-.000	.236

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1358	782	229	964	1316	763	230	947	814	493834.4
46	323	810			316	781			548	467870.50
94	727	516			678	516			597	509241.00
142	553	536			563	532			517	394335.00
190	675	722			642	676			659	417806.00
238	461	584			429	549			489	374085.00
286	485	538			449	503			476	368424.00
334	418	459			387	423			405	313470.00
381	383	420			353	387			370	286380.00
429	724	2719			311	394			352	272835.00
477	894	568			268	318			293	226782.00
513	-1245	1204			218	267			242	187695.00
533	148	6376			140	188			164	126936.00
533	1271	-314	925		242	158	240		213	165120.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.741	1.768	-0.000	.260	.246	-.000	.248

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1358	780	230	966	1316	761	231	949	814	493976.3
46	324	812			317	783			550	469150.00
94	729	517			680	517			598	510520.50
142	554	537			504	533			518	395097.00
190	677	724			644	678			661	419074.00
238	462	585			430	550			490	374850.00
286	486	540			450	505			477	369585.00
334	419	460			388	424			406	314244.00
381	385	422			355	389			372	287928.00
429	725	2721			312	396			354	273996.00
477	894	570			268	320			294	227556.00
513	-1242	1205			221	268			244	189243.00
533	148	6379			140	191			165	128097.00
533	1271	-313	926		242	159	241		214	165636.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.732	1.761	-0.000	.269	.243	-.000	.256

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1360	780	229	968	1318	761	230	951	815	494401.6
46	324	814			317	785			551	470003.00
94	732	518			683	518			600	512226.50
142	556	538			506	534			520	396240.00
190	678	727			645	681			663	420342.00
238	464	588			432	553			492	376762.50
286	488	541			452	506			479	370746.00
334	422	462			391	426			408	316179.00
381	386	424			356	391			373	289089.00
429	726	2722			313	367			355	274770.00
477	895	572			269	322			295	228717.00
513	-1241	1206			222	269			245	190017.00
533	149	6379			141	191			166	128484.00
533	1273	-312	926		244	160	241		215	166410.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.724	1.753	-0.000	.277	.251	-.000	.264

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1361	779	229	965	1319	760	230	948	814	493976.3
46	325	816			318	787			552	471282.50
94	733	518			684	518			601	512653.00
142	556	537			506	533			519	395859.00
190	678	728			645	682			663	420659.00
238	464	588			432	553			492	376762.50
286	488	543			452	508			480	371520.00
334	421	463			390	427			408	316179.00
381	387	425			357	392			374	289863.00
429	726	2724			313	369			356	275544.00
477	895	574			269	324			296	229491.00
513	-1241	1206			222	269			245	190017.00
533	149	6381			141	193			167	129258.00
533	1274	-311	926		245	161	241		216	166926.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.710	1.741	-0.000	.291	.263	-.000	.277

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1361	779	229	968	1319	760	230	951	815	494401.6
46	326	817			319	788			553	472135.50
94	734	517			685	517			601	512653.00
142	557	537			507	533			520	396240.00
190	678	728			645	682			663	420659.00
238	464	589			432	554			493	377145.00
286	489	544			453	509			481	372294.00
334	423	464			392	428			410	317340.00
381	387	426			357	393			375	290250.00
429	728	2724			315	399			357	276318.00
477	896	574			270	324			297	229878.00

513	-1240	1205		223	268		245	190017.00
533	149	6380		141	192		166	128871.00
533	1275	-310	928	246	162	243	217	167958.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.700	1.733	-0.000	.301	.271	-.000	.286

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1363	779	230	970	1321	760	231	953	816	495109.8
46	327	820			320	791			555	473841.50
94	736	517			687	517			602	513506.00
142	557	538			507	534			520	396621.00
190	679	730			646	684			665	421610.00
238	466	590			434	555			494	378292.50
286	490	546			454	511			482	373455.00
334	423	464			392	428			410	317340.00
381	389	427			359	394			376	291411.00
429	728	2726			315	401			358	277052.00
477	896	576			270	326			298	230652.00
513	-1238	1205			225	268			246	190791.00
533	150	6383			142	195			168	130419.00
533	1276	-310	929		247	162	244		218	168474.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.692	1.726	-0.000	.309	.278	.000	.294

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1364	777	233	968	1322	758	234	951	816	495109.8
46	326	821			319	792			555	473841.50
94	736	515			687	515			601	512653.00
142	558	538			508	534			521	397002.00
190	680	731			647	685			666	422244.00
238	466	592			434	557			495	379057.50
286	491	547			455	512			483	374229.00
334	425	469			394	433			413	320049.00
381	396	435			366	402			384	297216.00
429	729	2727			316	402			359	277866.00
477	897	578			271	328			299	231813.00
513	-1237	1205			226	268			247	191178.00
533	151	6384			143	196			169	131193.00
533	1276	-310	929		247	162	244		218	168474.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.686	1.723	-0.000	.315	.281	.000	.298

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1368	777	249	968	1326	758	250	951	821	497934.5
46	328	823			321	794			557	475547.50
94	738	517			689	517			603	514359.00
142	560	538			510	534			522	397764.00
190	681	734			648	688			668	423512.00
238	468	594			436	559			497	380587.50
286	492	549			456	514			485	375390.00

334	425	467		394	431		413	319275.00
381	392	430		362	397		379	293733.00
429	730	2729		317	404		360	279027.00
477	898	579		272	329		300	232587.00
513	-1236	1205		227	268		247	191565.00
533	152	6386		144	198		171	132354.00
533	1277	-309	929	248	163	244	218	168990.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.681	1.721	-0.000	.320	.283	*0.000	.302

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1370	778	251	970	1328	759	252	953	823	498920.0
46	328	824			321	795			558	475974.00
94	738	518			689	518			603	514785.50
142	560	538			510	534			522	397764.00
190	680	735			647	689			668	423512.00
238	467	594			435	559			497	380205.00
286	492	549			456	514			485	375390.00
334	426	467			395	431			413	319662.00
381	390	428			360	395			377	292185.00
429	728	2728			315	403			359	277866.00
477	897	577			271	327			299	231426.00
513	-1238	1202			225	265			245	189630.00
533	150	6384			142	196			169	130806.00
533	1273	-310	926		244	162	241		216	166926.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.680	1.723	-0.000	.321	.281	-.000	.301

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1374	779	255	970	1332	760	256	953	825	500184.8
46	329	826			322	797			559	477253.50
94	740	519			691	519			605	516065.00
142	560	538			510	534			522	397764.00
190	682	736			649	690			669	424463.00
238	468	596			436	561			498	381352.50
286	494	550			458	515			486	376551.00
334	428	469			397	433			415	321210.00
381	394	432			364	399			381	295281.00
429	731	2730			318	405			361	279801.00
477	899	580			273	330			301	233361.00
513	-1234	1204			229	267			248	191952.00
533	152	6387			144	199			171	132741.00
533	1276	-308	930		247	164	245		219	169248.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.678	1.723	-0.000	.323	.281	*0.435	.302

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1376	778	240	970	1334	759	241	953	822	498216.2
46	330	826			323	797			560	477680.00
94	741	518			692	518			605	516065.00

142	562	538			512	534			523	398526.00
190	682	737			649	691			670	424780.00
238	470	597			438	562			500	382500.00
286	494	551			458	516			487	376938.00
334	427	467			396	431			413	320049.00
381	393	431			363	398			380	294507.00
429	731	2730			318	405			361	279801.00
477	899	580			273	330			301	233361.00
513	-1234	1204			229	267			248	191952.00
533	152	6387			144	199			171	132741.00
533	1276	-308	929		247	164	244		218	168990.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.676	1.724	-0.000	.325	.280	*0.000	.303

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1378	779	246	972	1336	760	247	955	824	499763.5
46	329	828			322	799			560	478106.50
94	741	518			692	518			605	516065.00
142	560	538			510	534			522	397764.00
190	682	738			649	692			670	425097.00
238	469	597			437	562			499	382117.50
286	495	551			459	516			488	377325.00
334	428	469			397	433			415	321210.00
381	394	432			364	399			381	295281.00
429	731	2731			318	406			362	280188.00
477	900	580			274	330			302	233748.00
513	-1232	1204			231	267			249	192726.00
533	152	6388			144	200			172	133128.00
533	1278	-306	930		249	166	245		220	170280.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.674	1.725	-0.000	.327	.279	*0.000	.303

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1380	780	246	972	1338	761	247	955	825	500184.8
46	330	829			323	800			561	478959.50
94	742	518			693	518			605	516491.50
142	562	538			512	534			523	398526.00
190	684	739			651	693			672	426048.00
238	470	598			438	563			500	382882.50
286	496	551			460	516			488	377712.00
334	429	470			398	434			416	321984.00
381	394	433			364	400			382	295668.00
429	732	2731			319	406			363	280575.00
477	900	582			274	332			303	234522.00
513	-1232	1205			231	268			249	193113.00
533	154	6390			146	202			174	134676.00
533	1280	-305	930		251	167	245		221	171054.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.672	1.726	-0.000	.329	.278	*0.000	.304

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1382	782	253	975	1340	763	254	958	829	502146.9
46	330	831			323	802			563	479812.50
94	744	518			695	518			606	517344.50
142	564	538			514	534			524	399288.00
190	684	740			651	694			672	426365.00
238	470	598			438	563			500	382882.50
286	497	552			461	517			489	378486.00
334	429	470			398	434			416	321984.00
381	395	434			365	401			383	296442.00
429	732	2734			319	409			364	281736.00
477	902	583			276	333			304	235683.00
513	-1232	1205			231	268			249	193113.00
533	154	6390			146	202			174	134676.00
533	1278	-304	930		249	168	245		221	170796.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.672	1.727	-0.000	.329	.277	*0.125	.303

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1384	782	248	975	1342	763	249	958	828	501727.0
46	330	831			323	802			563	479812.50
94	744	519			695	519			607	517771.00
142	563	538			513	534			523	398907.00
190	683	741			650	695			672	426365.00
238	470	599			438	564			501	383265.00
286	496	553			460	518			489	378486.00
334	429	470			398	434			416	321984.00
381	395	434			365	401			383	296442.00
429	732	2733			319	408			363	281349.00
477	901	582			275	332			303	234909.00
513	-1232	1204			231	267			249	192726.00
533	155	6389			147	201			174	134676.00
533	1278	-305	930		249	167	245		220	170538.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.672	1.728	-0.000	.329	.276	*0.000	.303

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1381	781	247	974	1339	762	248	957	826	500886.3
46	331	831			324	802			563	480239.00
94	743	518			694	518			606	516918.00
142	564	538			514	534			524	399288.00
190	684	740			651	694			672	426365.00
238	470	599			438	564			501	383265.00
286	497	553			461	518			489	378873.00
334	429	471			398	435			416	322371.00
381	395	434			365	401			383	296442.00
429	733	2732			320	407			363	281349.00
477	901	583			275	333			304	235296.00
513	-1232	1204			231	267			249	192726.00
533	154	6389			146	201			173	134289.00
533	1280	-305	930		251	167	245		221	171054.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.672	1.728	-0.000	.329	.276	.000	.303

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1381	780	246	972	1339	761	247	955	825	500325.2
46	331	832			324	803			563	480665.50
94	744	518			695	518			606	517344.50
142	566	538			516	534			525	400050.00
190	684	741			651	695			673	426682.00
238	470	600			438	565			501	383647.50
286	497	554			461	519			490	379260.00
334	430	472			399	436			417	323145.00
381	395	435			365	402			383	296829.00
429	733	2733			320	408			364	281736.00
477	901	583			275	333			304	235296.00
513	-1232	1205			231	268			249	193113.00
533	155	6389			147	201			174	134676.00
533	1280	-304	930		251	168	245		221	171312.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.672	1.729	-0.000	.329	.275	.000	.302

FOR APPLIED LOAD OF 488800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1383	781	248	972	1341	762	249	955	827	501026.5
46	330	831			323	802			563	479812.50
94	745	519			696	519			607	518197.50
142	564	539			514	535			524	399669.00
190	685	742			652	696			674	427316.00
238	471	600			439	565			502	384030.00
286	497	554			461	519			490	379260.00
334	430	472			399	436			417	323145.00
381	396	435			366	402			384	297216.00
429	733	2733			320	408			364	281736.00
477	901	584			275	334			304	235683.00
513	-1232	1204			231	267			249	192726.00
533	156	6388			148	200			174	134676.00
533	1280	-304	930		251	168	245		221	171312.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.672	1.729	-0.000	.329	.275	*0.000	.302

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1516	852	285	1056	1474	833	286	1039	908	544686.3
46	365	920			358	891			624	532698.50
94	818	562			769	562			665	567671.50
142	603	592			553	588			570	434721.00
190	762	801			729	755			742	470428.00
238	527	661			495	626			560	428782.50
286	570	610			534	575			554	429183.00
334	479	535			448	499			473	366489.00
381	448	498			418	465			441	341721.00
429	785	2802			372	477			424	328563.00
477	943	659			317	409			363	280962.00
513	-1182	1294			281	357			319	246906.00
533	214	6448			206	260			233	180342.00

533	1354	-248	1008		325	224	323	291	224976.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.472	1.529	-0.000	.529	.475	.000	.502

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1521	853	286	1054	1479	834	287	1037	909	245326.2
46	364	922			357	893			625	533125.00
94	820	560			771	560			665	567671.50
142	604	591			554	587			570	434721.00
190	765	798			732	752			742	470428.00
238	527	660			495	625			560	428400.00
286	573	608			537	573			555	429570.00
334	479	536			448	500			474	366876.00
381	448	500			418	467			442	342495.00
429	784	2805			371	480			425	329337.00
477	942	663			316	413			364	282123.00
513	-1183	1299			280	362			321	248454.00
533	218	6450			210	262			236	182664.00
533	1356	-244	1010		327	228	325		293	227040.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.398	1.457	-0.000	.603	.547	*0.000	.575

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1528	854	288	1054	1486	835	289	1037	912	246602.8
46	365	922			358	893			625	533551.50
94	818	557			769	557			663	565539.00
142	604	589			554	585			569	433959.00
190	768	800			735	754			744	472013.00
238	529	662			497	627			562	429930.00
286	576	608			540	573			556	430731.00
334	480	538			449	502			475	368037.00
381	448	502			418	469			443	343269.00
429	785	2806			372	481			426	330111.00
477	940	665			314	415			364	282123.00
513	-1182	1300			281	363			322	249228.00
533	207	6452			199	264			231	179181.00
533	1356	-245	1010		327	227	325		293	226782.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.359	1.418	-0.000	.642	.586	.000	.614

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1534	856	292	1056	1492	837	293	1039	915	248383.0
46	366	924			359	895			627	534831.00
94	820	556			771	556			663	565965.50
142	606	590			556	586			571	435102.00
190	769	799			736	753			744	472013.00
238	530	662			498	627			563	430312.50
286	576	609			540	574			557	431118.00
334	482	539			451	503			477	369198.00
381	450	503			420	470			445	344430.00

429	787	2810		374	485		429	332433.00
477	942	670		316	420		368	284832.00
513	-1180	1301		283	364		323	250389.00
533	219	6455		211	267		239	184986.00
533	1358	-243	1012	329	229	327	295	228330.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.326	1.385	-0.000	.675	.479	*0.000	.647

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1540	859	296	1056	1498	840	297	1039	918	550028.7
46	366	925			359	896			627	535257.50
94	820	557			771	557			664	566392.00
142	606	590			556	586			571	435102.00
190	768	796			735	750			742	470745.00
238	530	660			498	625			561	429547.50
286	576	606			540	571			555	429957.00
334	481	539			450	503			476	368811.00
381	449	503			419	470			444	344043.00
429	784	2808			371	483			427	330498.00
477	938	668			312	418			365	282510.00
513	-1182	1300			281	363			322	249228.00
533	218	6454			210	266			238	184212.00
533	1356	-244	1010		327	228	325		293	227040.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.301	1.359	-0.000	.700	.645	.000	.672

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1543	858	296	1053	1501	839	297	1036	918	549902.4
46	366	926			359	897			628	535684.00
94	820	556			771	556			663	565965.50
142	606	590			556	586			571	435102.00
190	770	795			737	749			743	471062.00
238	530	660			498	625			561	429547.50
286	578	606			542	571			556	430731.00
334	483	542			452	506			479	370746.00
381	452	506			422	473			447	346365.00
429	787	2812			374	487			430	333207.00
477	940	672			314	422			368	284832.00
513	-1180	1303			283	366			324	251163.00
533	221	6458			213	270			241	186921.00
533	1361	-240	1016		332	232	331		298	230910.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.276	1.334	-0.000	.725	.670	*0.000	.697

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1550	859	303	1051	1508	840	304	1034	921	551541.6
46	365	927			358	898			628	535684.00
94	822	557			773	557			665	567245.00
142	608	591			558	587			572	436245.00
190	771	796			738	750			744	471696.00

238	532	662		500	627			563	431077.50
286	579	609		543	574			558	432279.00
334	482	541		451	505			478	369972.00
381	452	507		422	474			448	346752.00
429	787	2812		374	487			430	333207.00
477	939	672		313	422			367	284445.00
513	-1179	1303		284	366			325	251550.00
533	220	6457		212	269			240	186147.00
533	1359	-242	1012	330	230	327		296	228846.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.261	1.317	-0.000	.740	.687	*0.000	.713

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1559	857	310	1040	1517	838	311	1023	922	551918.8
46	366	928			359	899			629	536537.00
94	823	557			774	557			665	567671.50
142	610	590			560	586			573	436626.00
190	775	800			742	754			748	474232.00
238	540	665			508	630			569	435285.00
286	583	611			547	576			561	434601.00
334	489	546			458	510			484	374616.00
381	458	511			428	478			453	350622.00
429	787	2812			374	487			430	333207.00
477	939	672			313	422			367	284445.00
513	-1179	1303			284	366			325	251550.00
533	220	6458			212	270			241	186534.00
533	1359	-241	1013		330	231	328		296	229362.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.244	1.299	-0.000	.757	.705	.000	.731

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1582	848	305	1040	1540	829	306	1023	924	553048.3
46	368	929			361	900			630	537816.50
94	823	557			774	557			665	567671.50
142	611	591			561	587			574	437388.00
190	774	799			741	753			747	473598.00
238	535	664			503	629			566	432990.00
286	582	611			546	576			561	434214.00
334	486	546			455	510			482	373455.00
381	456	510			426	477			451	349461.00
429	790	2816			377	491			434	335916.00
477	941	676			315	426			370	286767.00
513	-1176	1305			287	368			327	253485.00
533	222	6461			214	273			243	188469.00
533	1364	-238	1018		335	234	333		301	232716.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.230	1.282	-0.000	.771	.722	*0.000	.747

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1611	857	318	1014	1569	838	319	997	931	556167.4

46	368	931			361	902			631	538669.50
94	824	558			775	558			666	568524.50
142	611	593			561	589			575	438150.00
190	776	800			743	754			748	474549.00
238	536	664			504	629			566	433372.50
286	583	610			547	575			561	434214.00
334	487	545			456	509			482	373455.00
381	456	511			426	478			452	349848.00
429	789	2817			376	492			434	335916.00
477	941	676			315	426			370	286767.00
513	-1176	1305			287	368			327	253485.00
533	222	6463			214	275			244	189243.00
533	1364	-238	1017		335	234	332		300	232458.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.218	1.269	-0.000	.783	.735	*0.000	.759

FOR APPLIED LOAD OF 540800.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1636	879	331	1013	1504	860	332	996	945	663420.5
46	368	930			361	901			631	538243.00
94	823	558			774	558			666	568098.00
142	611	593			561	589			575	438150.00
190	777	799			744	753			748	474549.00
238	538	666			506	631			568	434902.50
286	586	613			550	578			564	436536.00
334	490	549			459	513			486	376164.00
381	460	515			430	482			456	352944.00
429	790	2819			377	494			435	337077.00
477	942	678			316	428			372	287928.00
513	-1175	1306			288	369			328	254259.00
533	223	6464			215	276			245	190017.00
533	1365	-237	1018		336	235	333		301	233232.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
1.207	1.257	-0.000	.794	.747	.000	.770

FOR APPLIED LOAD OF 572000.00 LB TIP LOAD = 0.00 LB
ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	1789	940	329	1074	1747	921	330	1057	1014	894874.7
46	383	1001			376	972			674	574922.00
94	826	563			777	563			670	571510.00
142	599	614			549	610			579	441579.00
190	834	783			801	737			769	487546.00
238	571	677			539	642			590	451732.50
286	658	604			622	569			595	460917.00
334	501	610			470	574			522	474028.00
381	478	568			448	535			491	380421.00
429	812	2869			399	544			471	364941.00
477	954	723			328	473			400	309987.00
513	-1162	1380			301	443			372	287928.00
533	253	6504			245	316			280	217107.00
533	1412	-208	1071		383	264	386		344	266514.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.366	.419	-0.000	1.635	1.585	*0.000	1.610

FOR APPLIED LOAD OF 0.00 LB TIP LOAD = 0.00 LB

ENTRY OF -0 MEANS TIP LOAD NOT DATA POINT

DEPTH	GRM1	GRM2	GRM3	GRM4	DRM1	DRM2	DRM3	DRM4	AVM	LOAD (LBS)
0	197	54	27	6	155	35	28	-11	52	25587.8
46	27	79			20	50			35	29855.00
94	49	23			0	23			11	9809.50
142	47	30			-3	26			11	8763.00
190	119	18			86	-28			29	18386.00
238	66	42			34	7			20	15682.50
286	135	26			89	-9			45	34830.00
334	49	120			18	84			51	39474.00
381	67	125			47	92			64	49923.00
429	445	2410			92	85			58	45279.00
477	633	369			7	119			63	48762.00
513	-1395	1117			68	180			124	95976.00
533	102	6316			94	128			111	85914.00
533	1156	-375	808		127	97	123		116	89526.00

SGZ1	SGZ2	SGZ3	STT1	STT2	STT3	AVG
.525	.552	-0.000	1.476	1.452	*0.000	1.464

APPENDIX K

INDIVIDUAL AND AVERAGE GAGE RESPONSE CURVES,

S1T1, S2T1, S3T1L1, S4T1

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The following pages contain individual and average response curves for the loading phase of the initial load tests on the four test shafts at the SH225 site. Each set of results contains a plot of the average gage response for gages of a given system at each level of a shaft superimposed on a single graph, followed by plots of individual and average responses for each level on separate graphs.

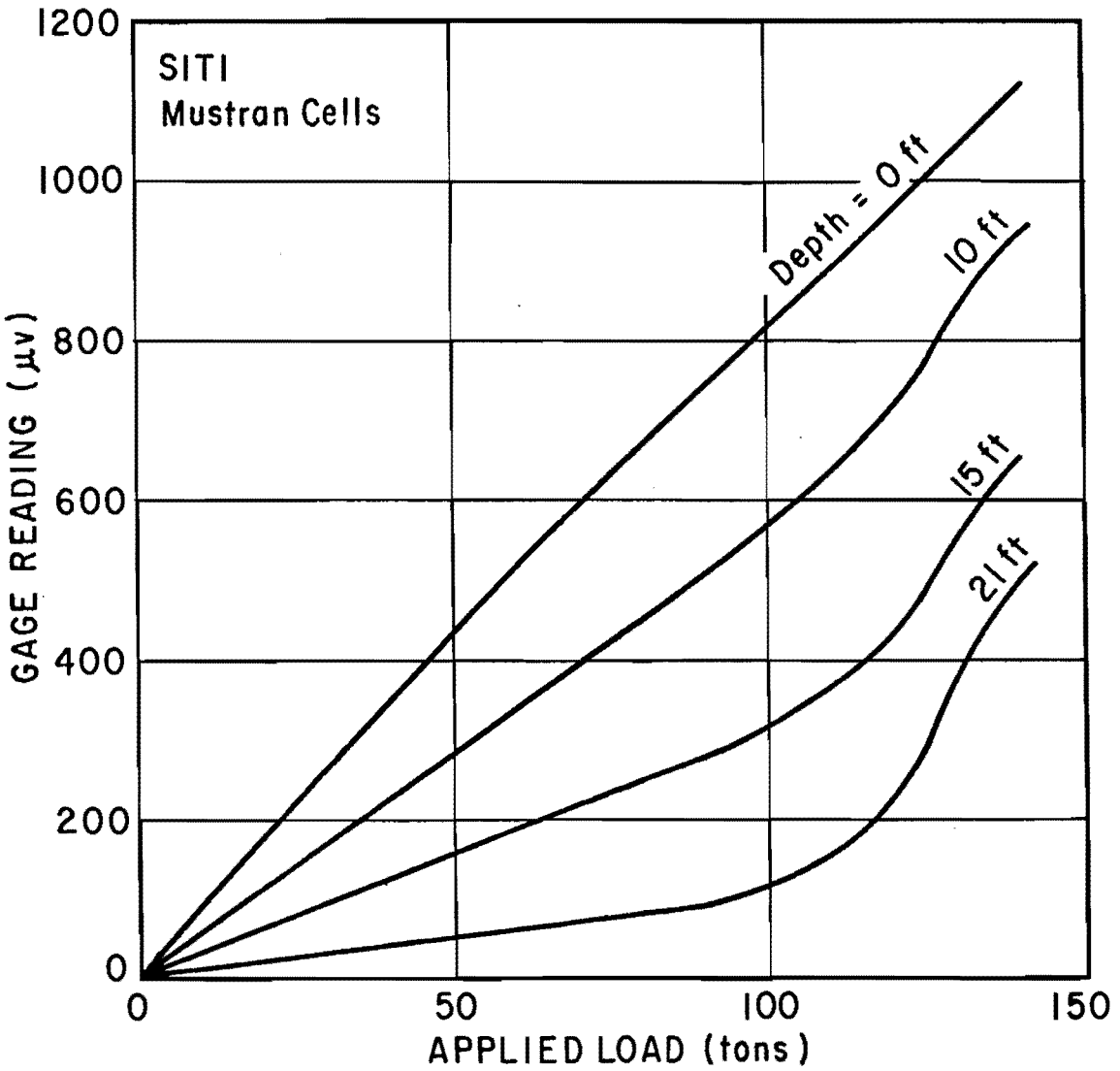


Fig. K.1. Average Response Curves for Mustran Cells, SITI

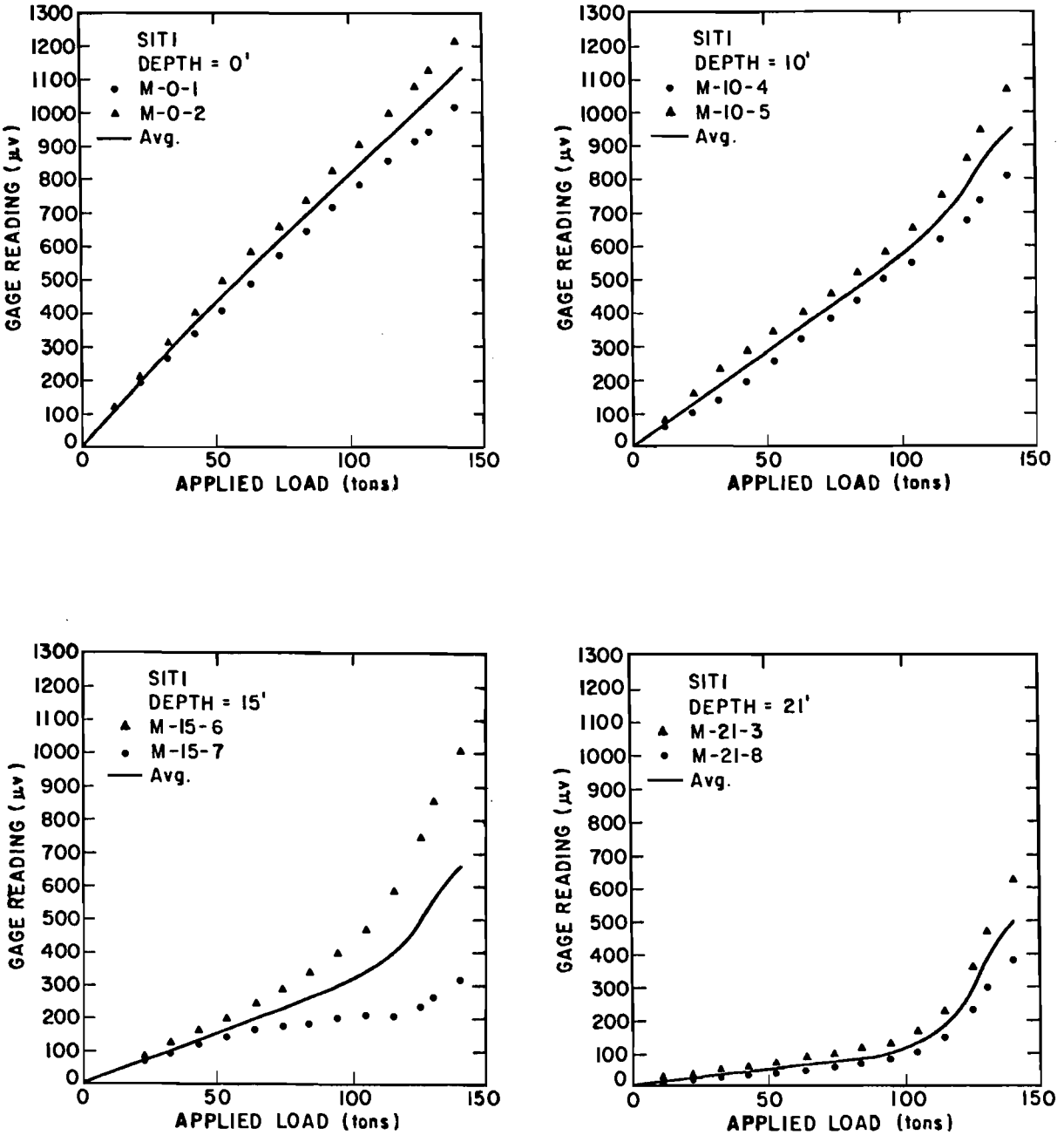


Fig. K.2. Individual Response Curves for Mustran Cells, S1T1

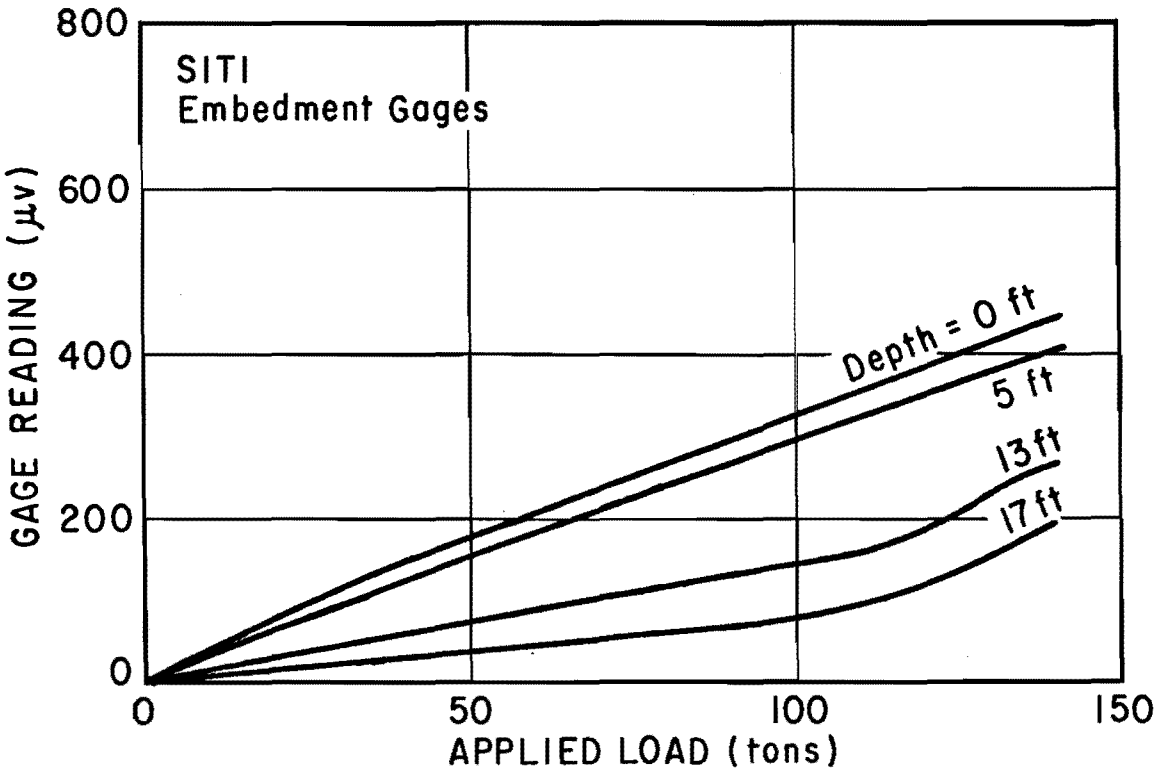
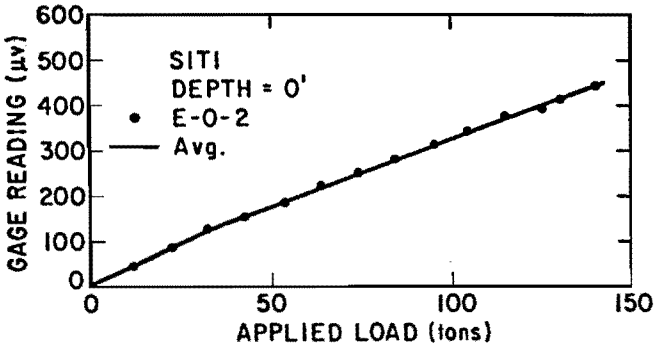
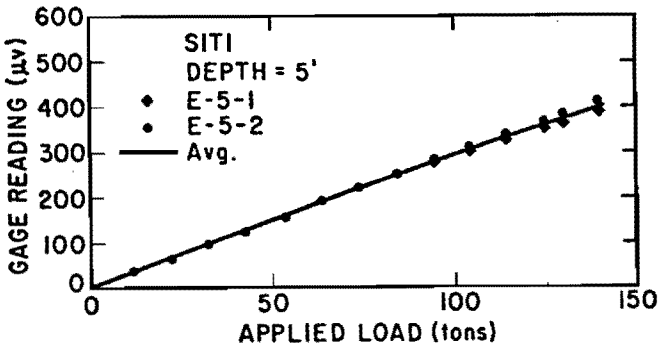
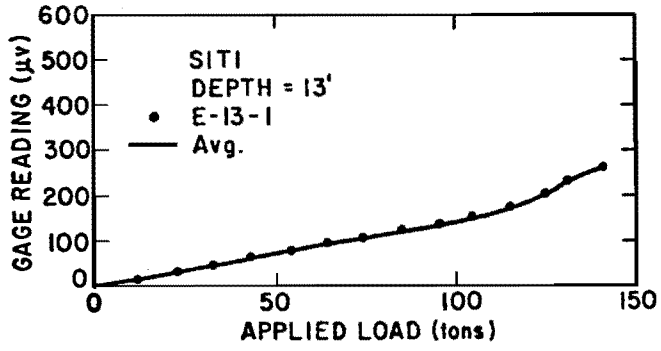


Fig. K.3. Average Response Curves for Embedment Gage Circuits, S1T1







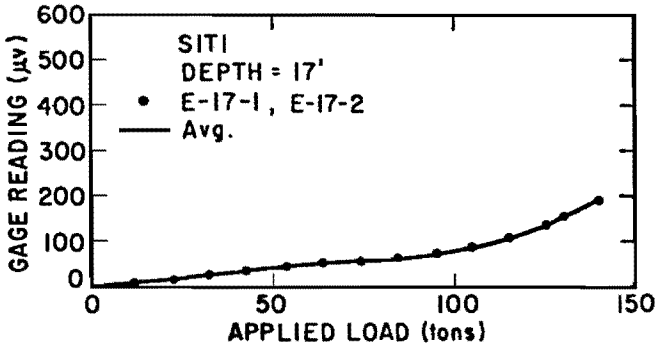


Fig. K.4. Individual Response Curves for Embedment Gage Circuits, S1T1

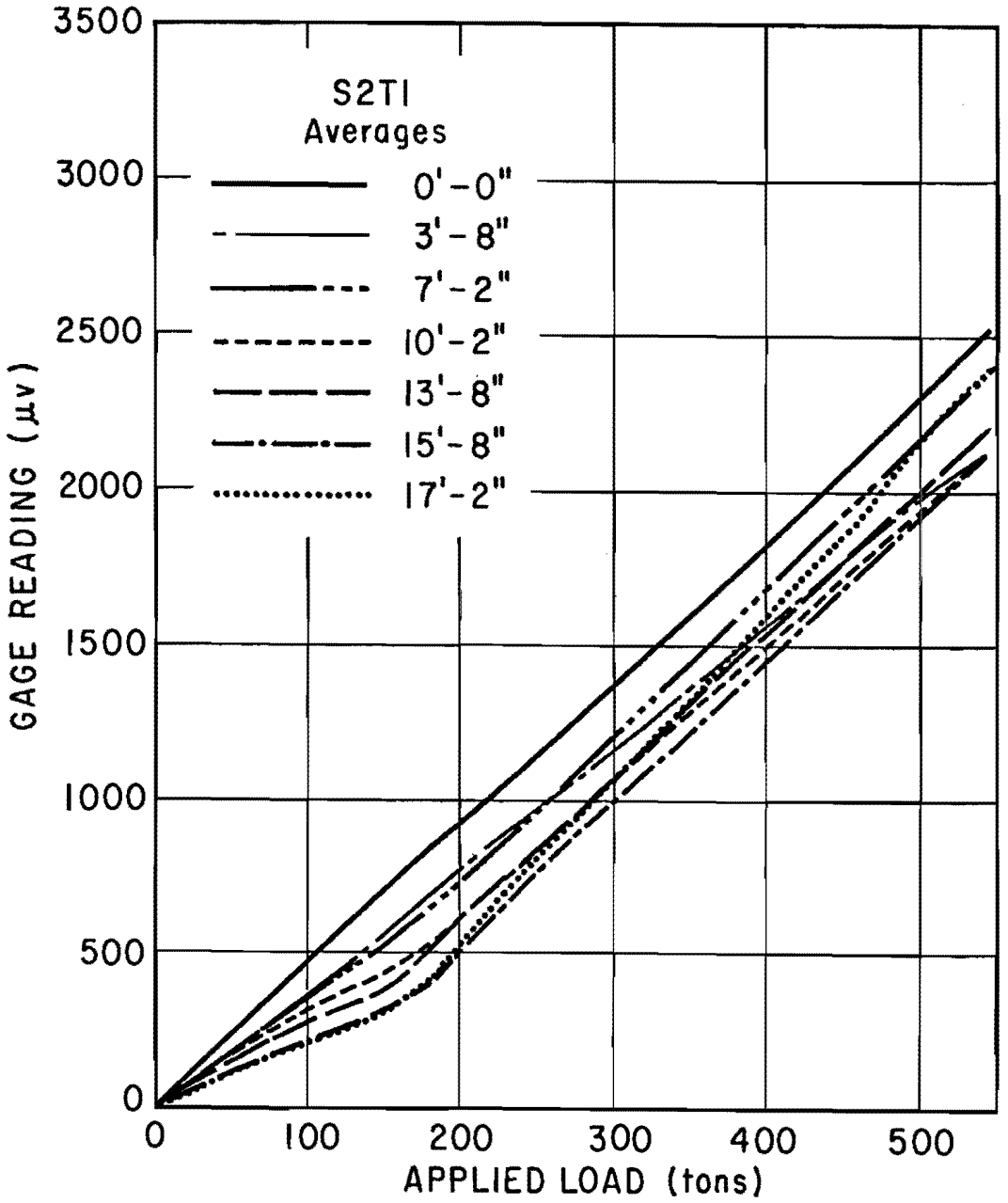


Fig. K.5. Average Response Curves for Mustran Cells, S2T1

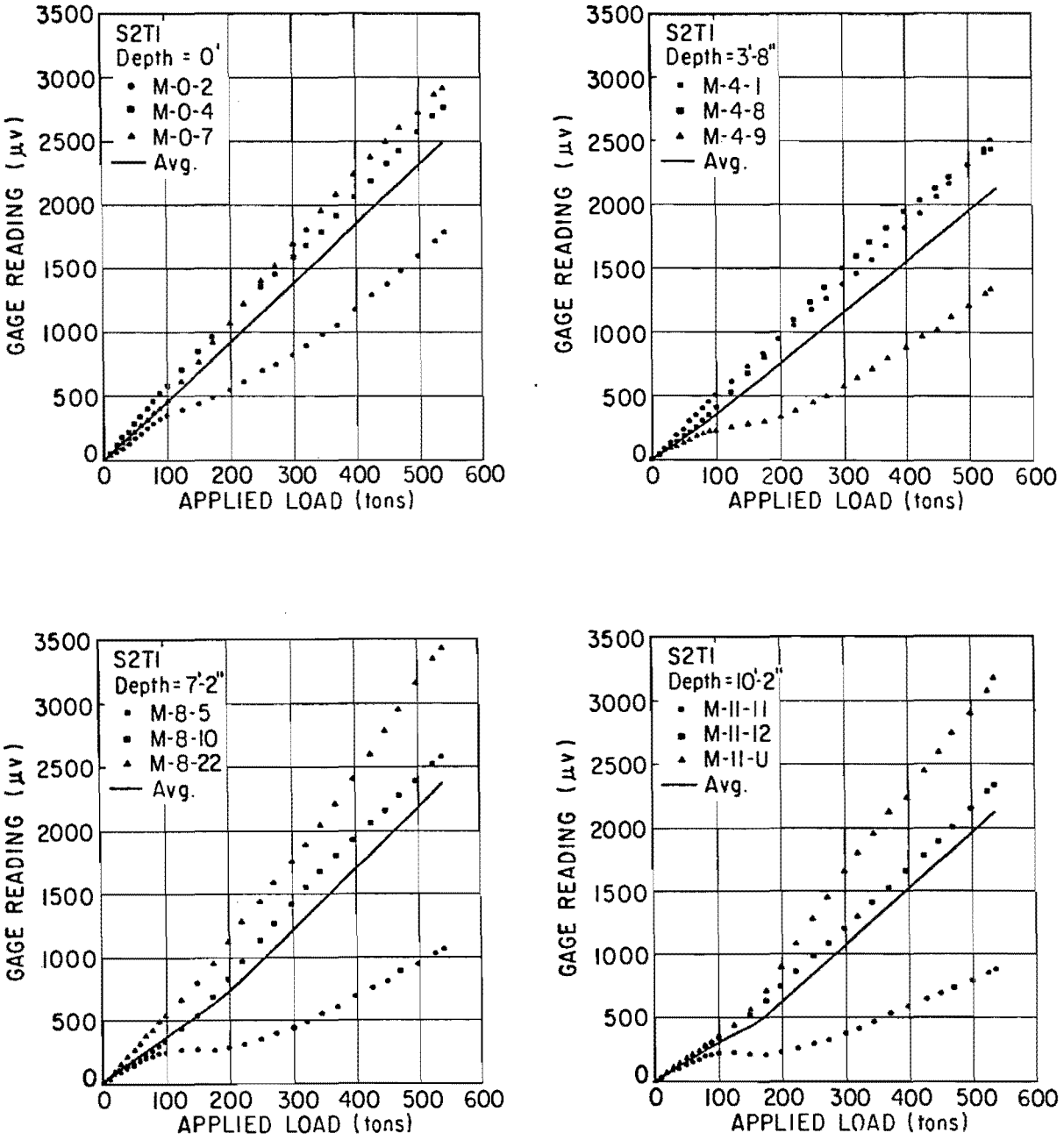


Fig. K.6. Individual Response Curves for Mustran Cells, S2T1

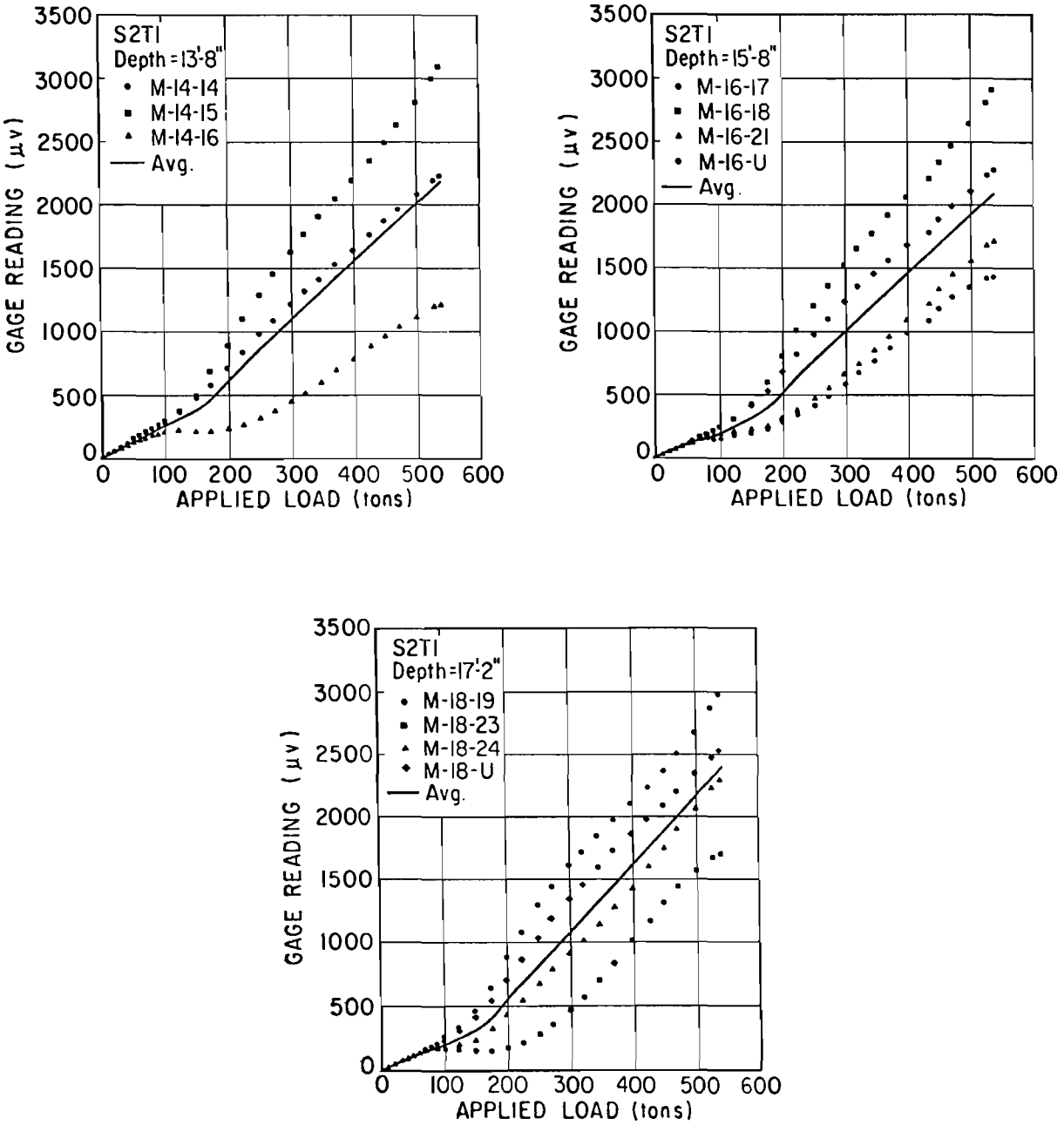


Fig. K.6. Continued

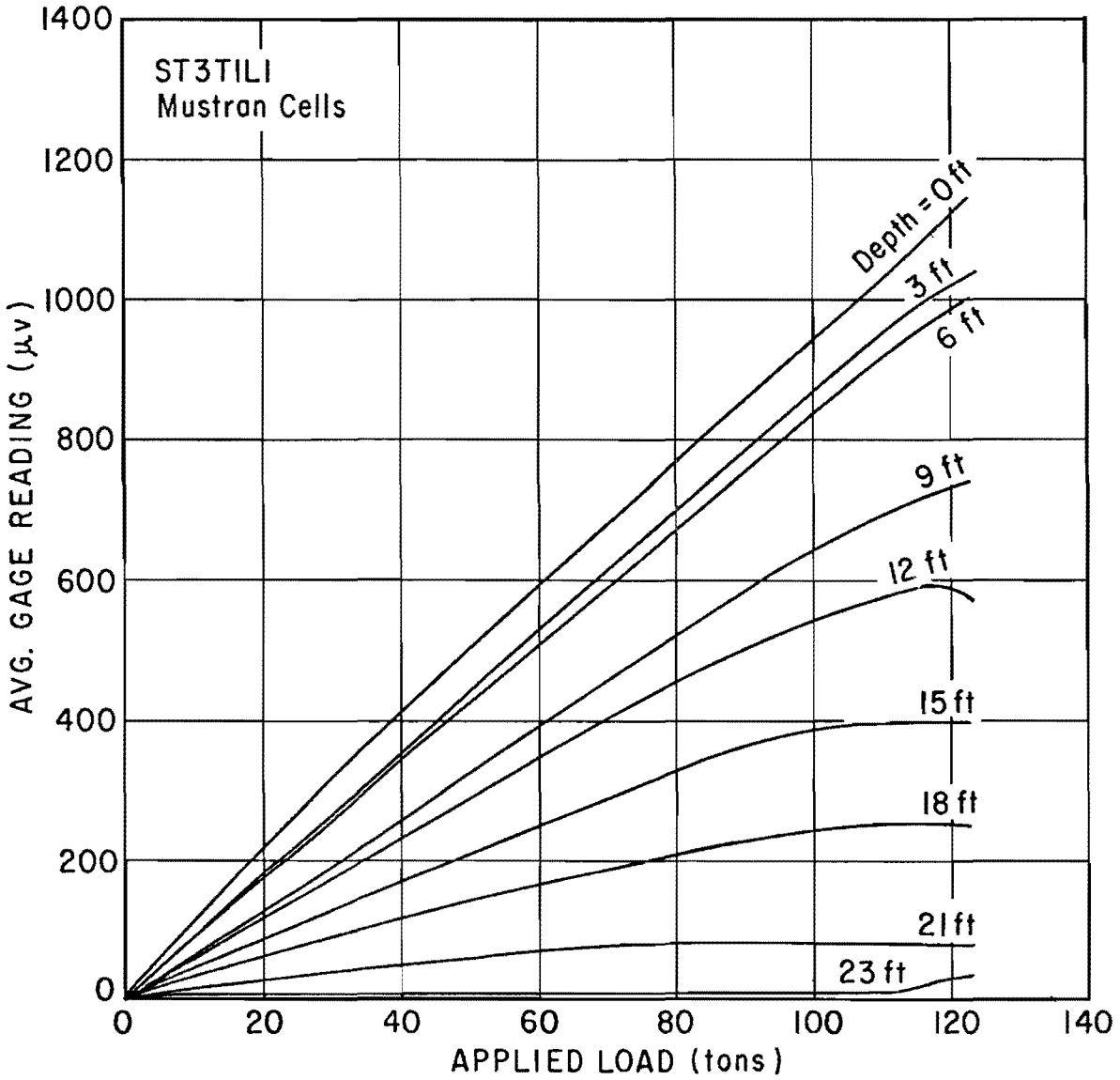


Fig. K.7. Average Response Curves for Mustran Cells, S3T1L1

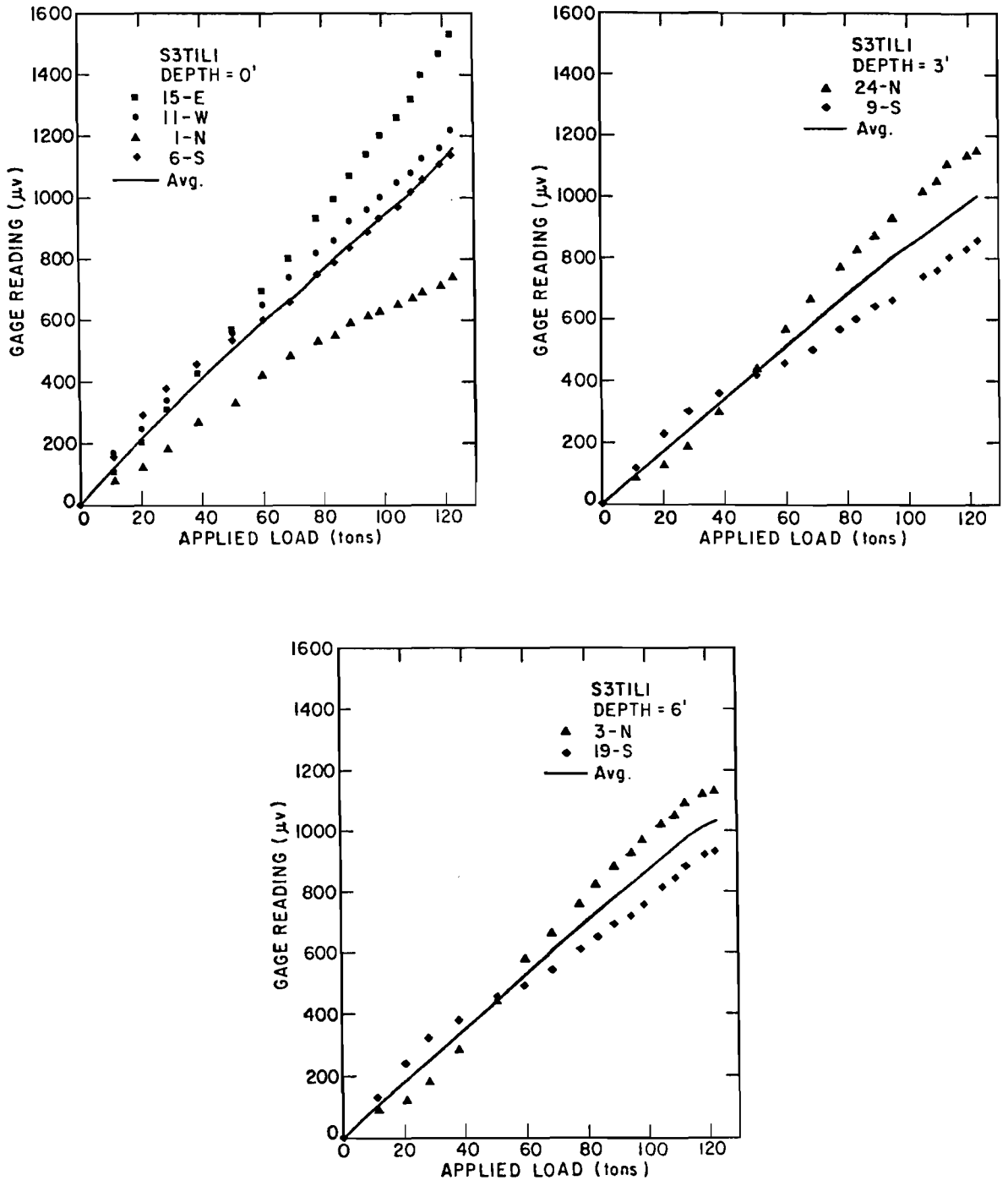
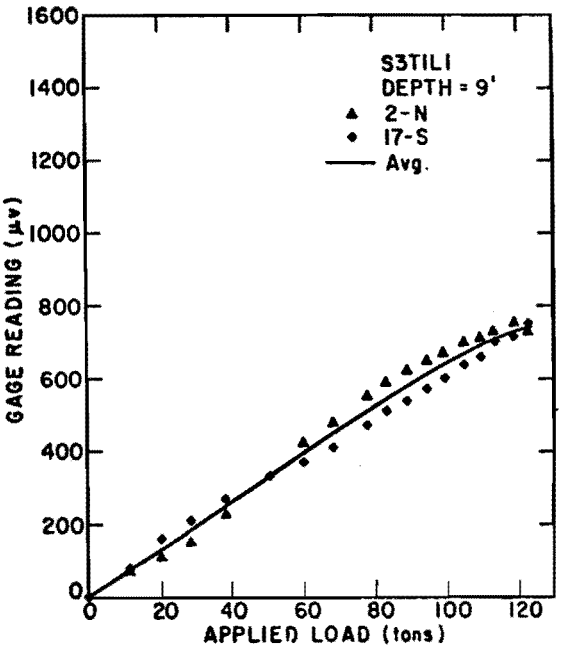
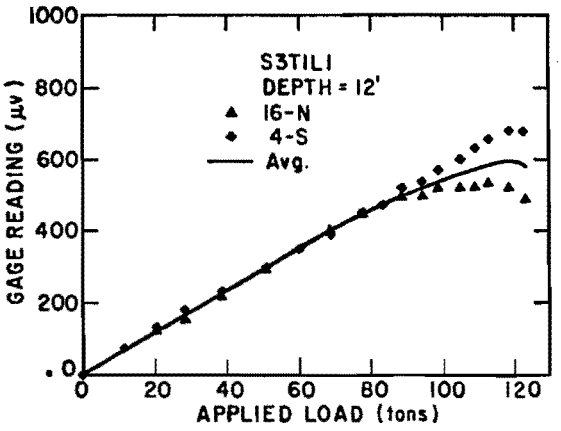


Fig. K.8. Individual Response Curves for Mustran Cells, S3T1L1





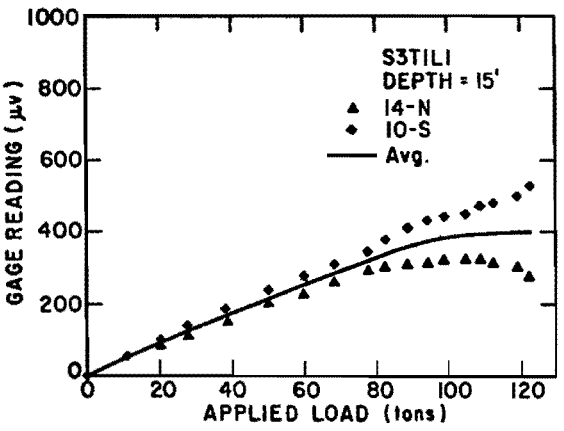
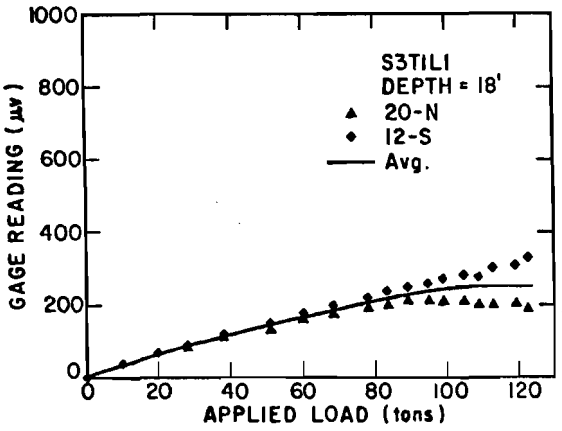
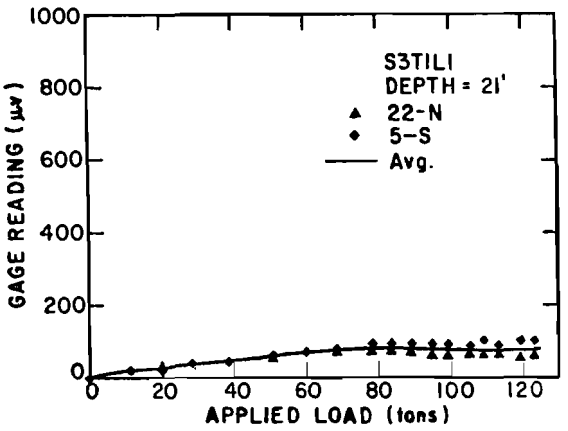


Fig. K.8. Continued





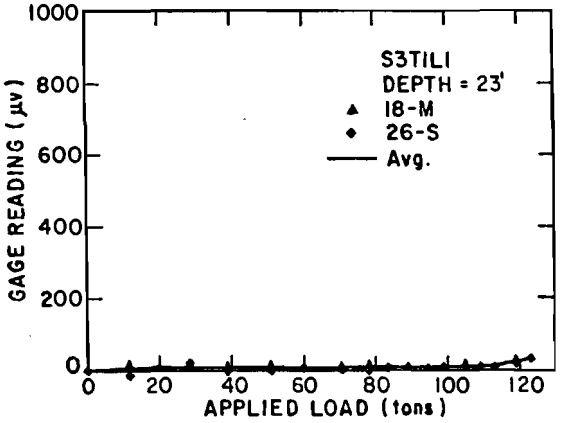


Fig. K.8. Continued

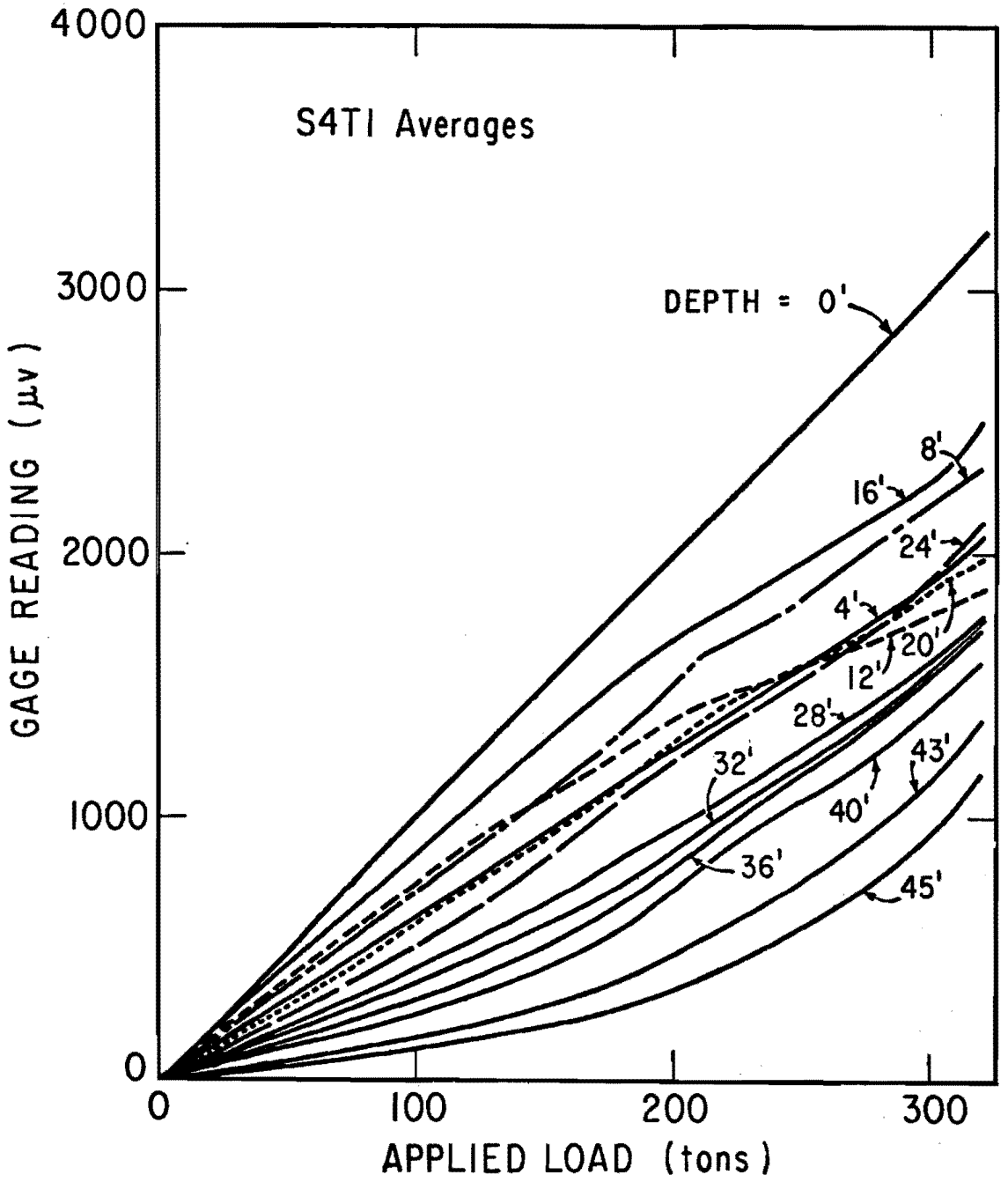


Fig. K.9. Average Response Curves for Mustran Cells, S4T1

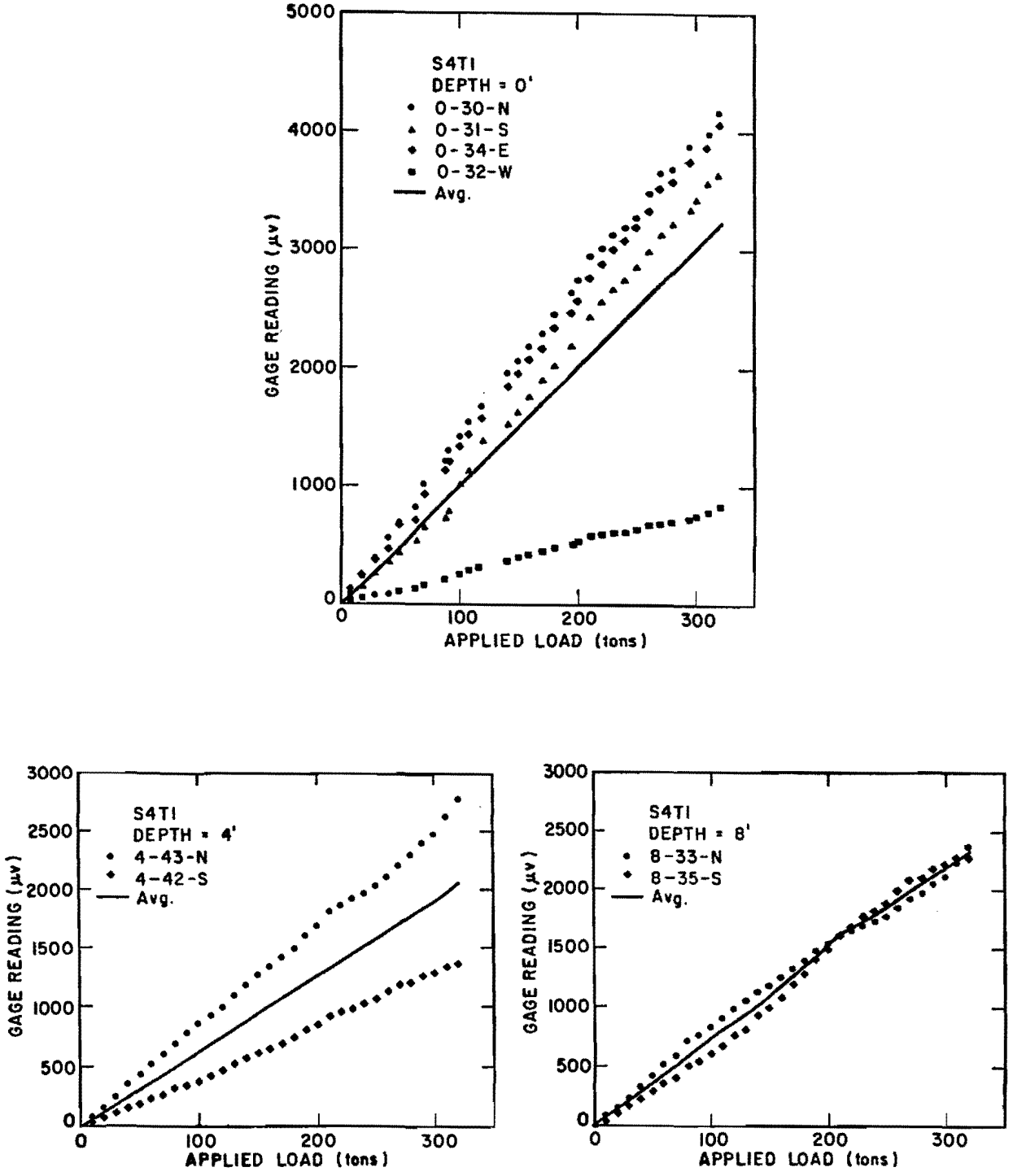
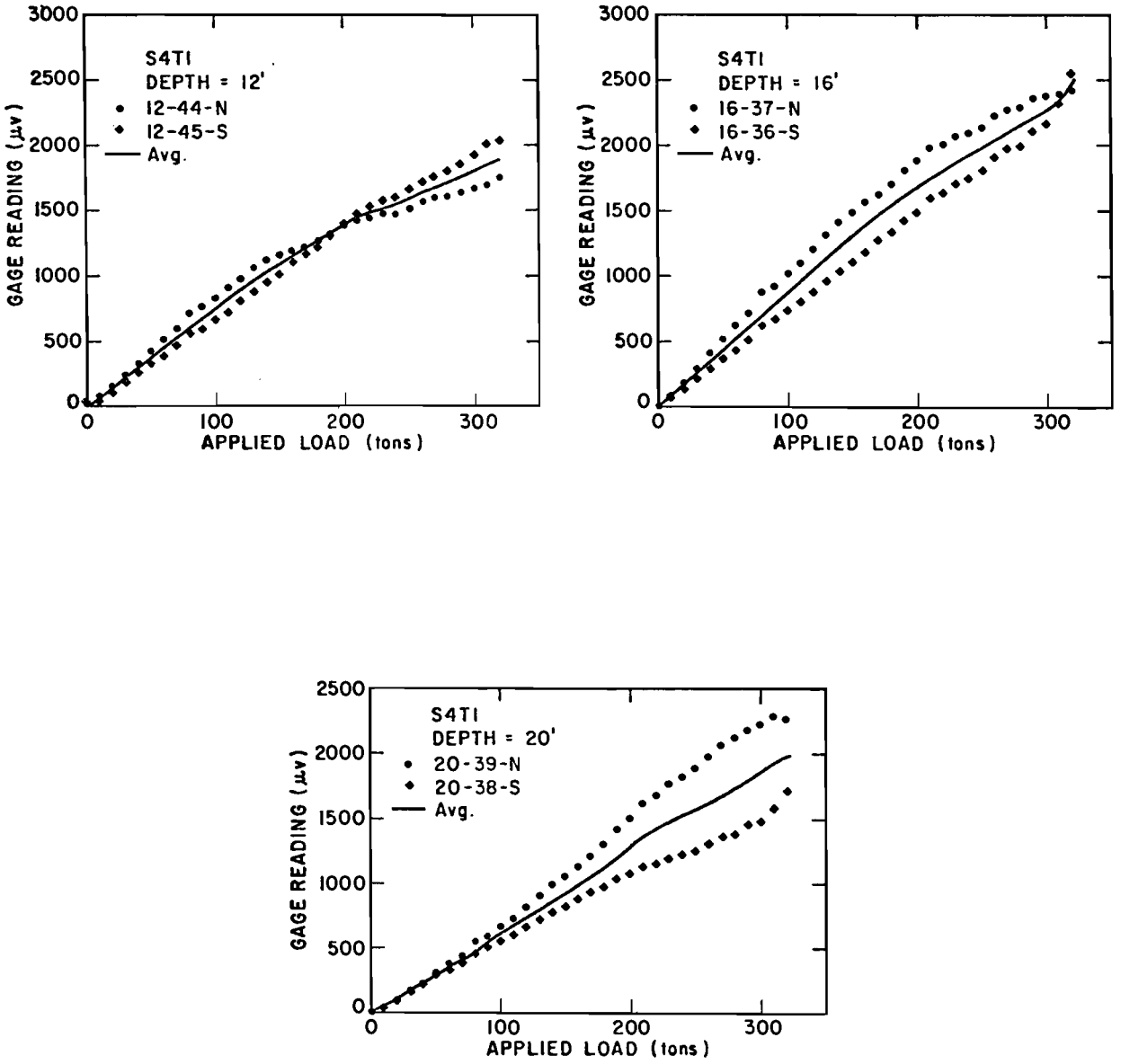


Fig. K.10. Individual Response Curves for Mustran Cells, S4T1



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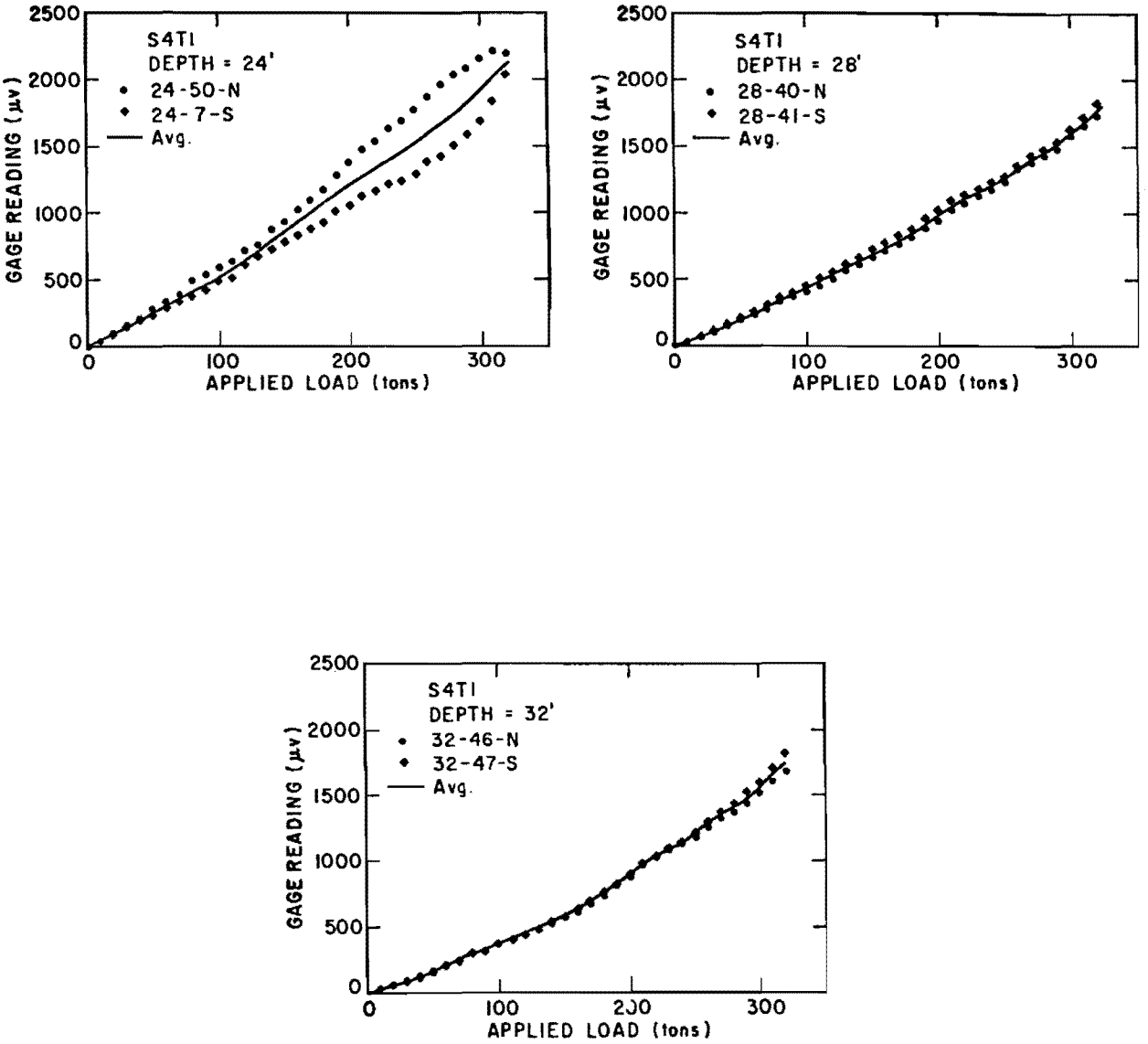

Fig. K.10. Continued

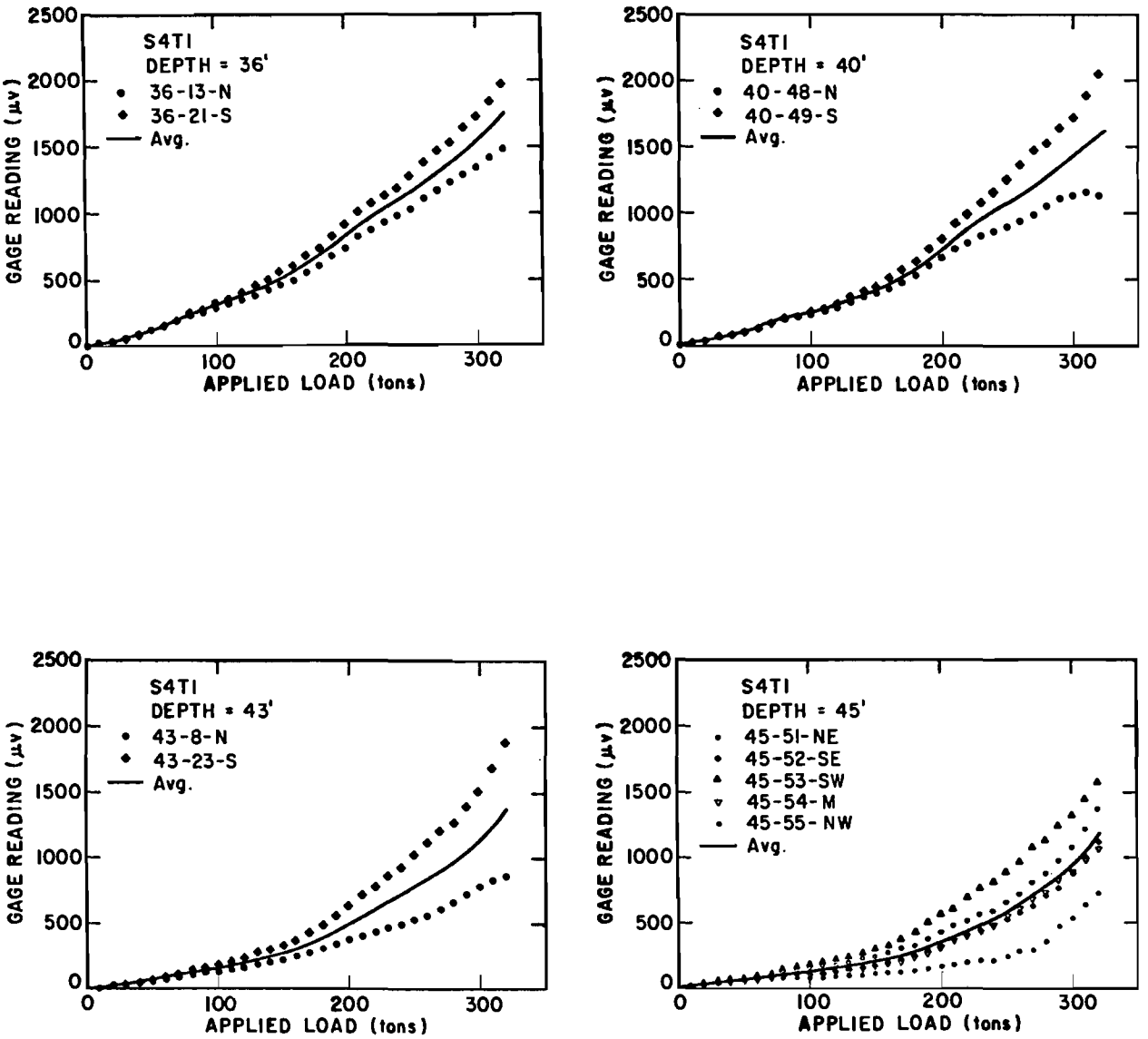

Fig. K.10. Continued

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