COMPUTERIZED METHOD OF PROJECTING REHABILITATION AND MAINTENANCE REQUIREMENTS DUE TO VEHICLE LOADINGS

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Computerized Methods of Projecting Rehabilitation
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DISCLAIMER

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CHAPTER 1

INTRODUCTION

This manual contains the user instructions for program RENU. The program provides a methodology for determining the effects of changes in truck size, weight, and configuration on pavement performance and for relating these effects to pavement maintenance and rehabilitation needs and costs. The procedure was developed for the Texas State Department of Highways and Public Transportation Project 298/312-5F, "Computerized Method of Projecting Rehabilitation and Maintenance Requirements Due to Vehicle Loadings," and is documented in the project final report [7].

OBJECTIVES

The objectives of this manual are three-fold:

1. To provide a summary description of the evaluation procedure.

2. To present descriptions of all necessary input parameters and guides to data sources.

3. To trace program RENU usage with a detailed user input guide and illustrative examples of program inputs and outputs.

SCOPE OF THE PROCEDURE

The procedure evaluates the effect of legal load limit changes on the life cycle costs of flexible, rigid, and/or composite pavements. Eighty representative design sections can be grouped by system (Interstate, State, FM, US) classifications of highways. The procedure allows a maximum of ten different truck types along with various axle and tire configurations, such as single and tandem axle configurations. While truck axle weight and configuration are the major variables considered, new trucks, such as triple trailer units, can be included in the procedure. The procedure contains a computerized gross vehicle weight and axle load distribution shifting procedure to assess the impact of changes in current legal load limits. The user may select different maintenance and rehabilitation cost models to be used for different representative sections. The procedure uses a separate age/lane-mile distribution for each representative section thereby allowing evaluation of a small road network, a district, or a state.

EVALUATION CONCEPTS

The evaluation procedure estimates total costs associated with changes in routine maintenance and rehabilitation requirements which result from changes in the legal load limits. There are five primary steps:

1. Read in input data.

2. Calculate proposed traffic load distributions and estimate the traffic rates for present and proposed legal load limits.

3. Determine the expected life cycles for all representative sections.

4. Predict maintenance, rehabilitation, and salvage value costs associated with each life cycle developed.

5. Output predicted cost ratios, cost differences, and remaining life information in terms of 18-kip (80-kN) equivalent single axle loads (ESAL) for present and proposed legal limits.

A brief conceptual flow diagram of the evaluation procedure is presented in Figure 1. For a listing of program RENU, refer to Appendix B.

Development of input data requires the cooperation of diverse highway agency departments including administration, construction, finance, design, maintenance, traffic, and transportation planning sections. Data needed include serviceability criteria, pavement structural characteristics, highway functional classifications, traffic data (both present and future), age/lane-mile distributions for representative existing highway sections, beginning of the analysis period, and rate of loss of pavement value. The amount of input data required is a function of the extent to which the user subdivides the highway network into classfications and representative sections.

No field or laboratory data are required for RENU input except for standard traffic count and loadometer weight information, i.e., W-4 and W-5 tables.

Input data for present and future traffic loading include estimates of the percent of trucks by type for each year of the analysis period; empty weight, single-axle weight, tandem-axle weight, triple-axle weight, and gross vehicle weight distributions for each truck type included in the analysis; equivalency factors; and an annual growth factor for 18-kip (80-kN) equivalent single-axle loads (ESAL). An important user option results from a feature of the traffic calculation that permits the user to select whether the total payload per year or total number of trips per year of the analysis period is maintained equal under present and proposed legal load limits.

The expected life cycles for each representative section are based upon conditions found prevalent in Texas. Table 1 shows the breakdown of representative sections for flexible pavements. Life cycle estimates are developed for pavements of each age from the age/lane-mile distribution, for each representative section. For pavements that fail due to serviceability, the rehabilitation routines of RENU determine the thickness and cost of asphalt concrete overlays for the existing pavement. In the case

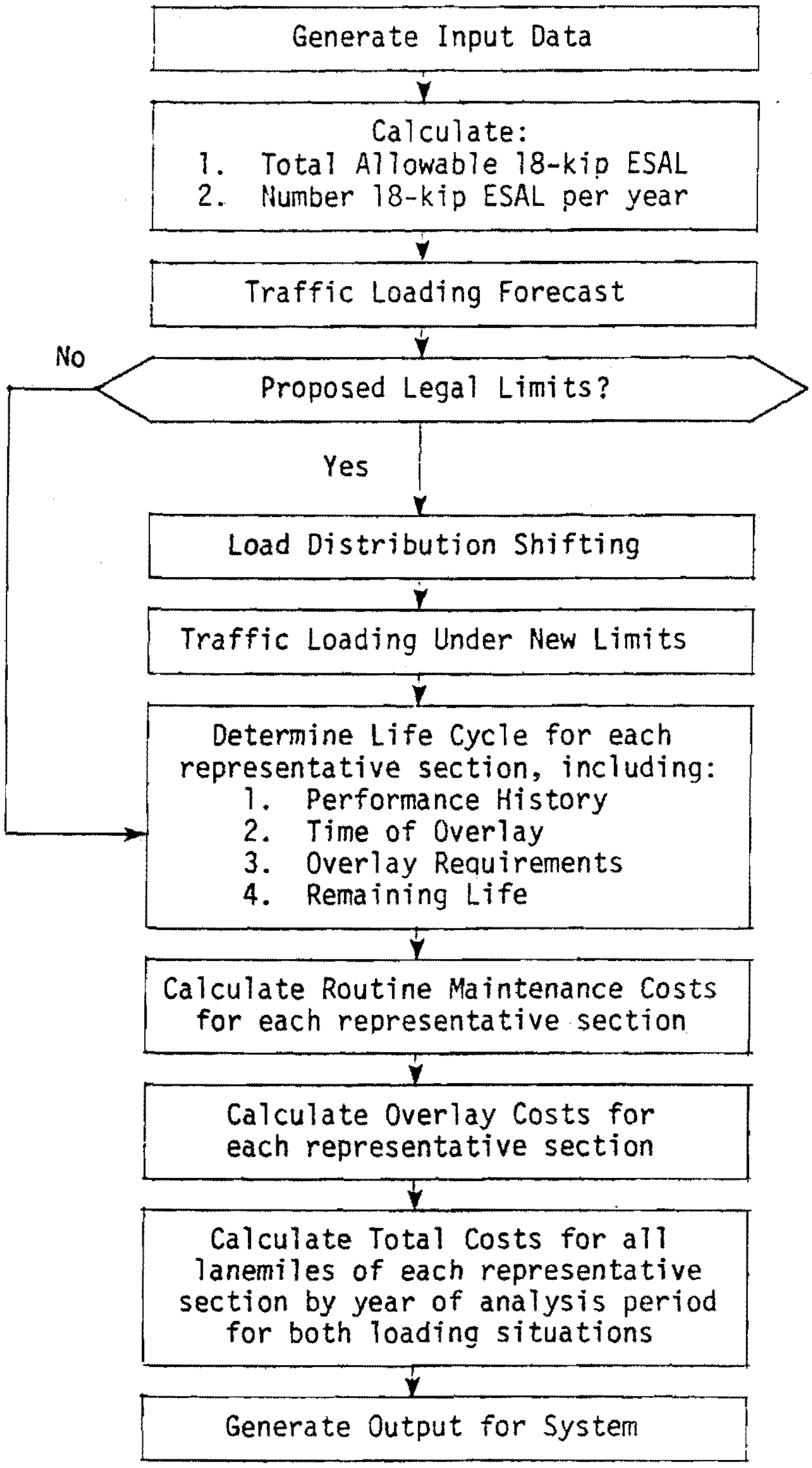

Figure 1. Basic Methodology of RENU.

TABLE 1. Representative sections for flexible pavements.

Highway Type	Rural/Urban	Traffic Intensity*	Pavement Type
Interstate	Rural	High	Hot Mix
Interstate	Rural	High	Overlaid
Interstate	Urban	High	Hot Mix
Interstate	Urban	High	Overlaid
Farm to Market	Rural	High	Hot Mix
Farm to Market	Rural	High	Overlaid
Farm to Market	Rural	Low	Hot Mix
Farm to Market	Rural	Low	Overlaid
Farm to Market	Rural	Not Applicable	Surface Treated
Farm to Market	Urban	High	Hot Mix
Farm to Market	Urban	High	Overlaid
Farm to Market	Urban	Low	Hot Mix
Farm to Market	Urban	Low	Overlaid
Farm to Market	Urban	Not Applicable	Surface Treated

US & State - Same as for Farm to Market

*Breakpoints for high and low traffic intensity: 4500 vpd for urban
1800 vpd for rural

No low traffic intensity Interstate sections found in state.

of pavements that fail because of distress (the most common cause of failure) the user must specify an overlay thickness. The expected costs of bringing the shoulders up to the overlay level with either asphalt and/or granular material are included in the rehabilitation costs. With the exception of flexible pavements that fail because of distress, RENU permits only one overlay for any representative section-age segment during the analysis period. In the case of failure due to distress, multiple layers are allowed.

Routine maintenance and rehabilitation costs are computed as a function of pavement deterioration-age relationships. "Routine maintenance" in RENU includes only those work items related to pavement condition. Therefore, items such as crack sealing, pot hole filling, or sealing should be considered. These maintenance activities are routine in nature to differentiate from major items such as rehabilitation, reconstruction, and resurfacing. The routine maintenance cost model for flexible pavements included in RENU is from an FHWA study that calculated maintenance cost information obtained from maintenance management systems [5]. The user also has the option to disregard routine maintenance costs in the evaluation. In addition to a choice of types of input for maintenance data, the user may also elect to spend the same amount of maintenance money both under present and proposed legal load limits but at an accelerated rate under the proposed legal limits. The spending is a function of the pavement deterioration cycle. The historical pavement maintenance information is a function of pavement type, functional classification and age.

Salvage value for the existing system is considered in the economic comparisons. For existing roadways the value for each representative section by age at the beginning of the analysis period is supplied by the user as input to RENU. Using this user input salvage value and the loss rate or change in salvage value with time, in percent per year, the first component of salvage value for the existing pavements is determined at the end of the analysis period. The second component of salvage value, that for the overlays, is calculated by computing the value of the fraction of remaining life at the end of the analysis period. The total salvage value, which is the sum of these two components, is then used as a component of the economic comparison.

The predicted economic impact to a highway agency of a legal load limit change, including changes in size or axle configuration, is output by representative section, roadway classification, or total network system. While the predicted costs under present and proposed limits may be of interest, the cost differences or "delta costs" and cost ratios between present and proposed estimates are the most reliable information. The pavement life at the end of the analysis period in terms of 18-kip (80-kN) ESAL for both load limits is also included in the output and should be of interest when making comparisons.

The evaluation procedure is an automated, modularized computer program. Thus, without hand calculations the engineer may investigate the effects of legal load limit and vehicle configuration changes and obtain an estimate of the economic impact of these changes on highway network routine maintenance and rehabilitation funding requirements and on pavement condition. For execution of the computer software of this procedure, a computer system such as the CDC 6600, IBM S/360, AMDAHL 470, or the Univac 1108 is required.

CHAPTER 2

DESCRIPTION AND GENERATION OF INPUT DATA

The evaluation procedure requires inputs from the following areas:

1. Traffic and load survey information

2. Performance prediction variables

3. Economic cost prediction data

4. Program controls and decision criteria

These data are supplied to program RENU using specific "keywords," as explained in Chapter 4 of Appendix A of this manual.

TRAFFIC AND LOAD SURVEY INFORMATION

Table 2 contains the input variables involved in the traffic calculations. The traffic information is expected to be available most readily on a system basis since it is collected in this manner for preparation of the standard W-4 and W-5 tables which include data for:

1. Interstate rural data

2. Other rural data

3. All rural data

4. All urban data

5. All systems data

The percent of each truck type as a percent of all vehicles is projected into the future to obtain an estimate of the traffic stream composition. These projected percentages should be made compatible with trends in the percent of total trucks for all sytems.

The number of truck types can easily be changed during the analysis period. For example, if a change in load limit laws leads to the conclusion that a particular type of truck will be replaced with a new type, this can be effected by gradually reducing the percent of the particular truck to zero at the expected date of occurence in the analysis period. One final point of particular interest is the ability of RENU to handle tridem-axle configurations, axles with single tires (i.e., steering axles), and trucks with multiple trailers.

Information on vehicle weights, present and proposed, is available in the literature. There are also numerous reports on the collection of

TABLE 2. Traffic and load survey information.

	VARIABLE	TYPICAL VALUES	COMMENTS
1.	AASHTO Truck Type Notations	3S2	Up to 10
2.	Percent of Truck Type as percent of all vehicles	6.31	
3.	Percent trucks as percent of all vehicles (Summation of all variable 2 inputs)	8.00	
4.	Axle code (number singles, tandems, tridems, and steering axles) Based on configuration	0200	
5.	Single axle load limits present and proposed, kips	20.0/22.4	
6.	Tandem axle load limits present and proposed, kips	34.0/36.0	
7.	Tridem axle load limits present and proposed, kips	56.0/56.0	
8.	GVW(1) load limits present and proposed, kips	80.0/120.0	
9.	Steering axle weights present and proposed, kips	11.0/16.0	Up to 10
10.	Expected percent change in empty vehicle weights	0	Up to 10
11.	Number of single axles weighed by weight interval	1885	W-4 Table
12.	Number of tandem axles weighed by weight interval	3720	W-4 Table
13.	Number of vehicles by GVW weight interval	1862	W-5 Table
14.	Number of empty vehicles weighted by weight interval	75	
15.	Number of steering axles measured by weight interval	725	
16.	Growth rate for 18 kip (80 kN) ESAL, percent per year	3	

(1) GVW is gross vehicle weight

Note: 1 kip = 4.45 kN

truck weight data (References [1], [2], and [9]). Percent of trucks by truck type can be obtained from planning survey groups within each highway agency. New techniques are also being developed to evaluate weights of in-motion vehicles (References [3], [4], and [8]). Figure 2 shows the AASHO truck type codes which may be used in RENU input.

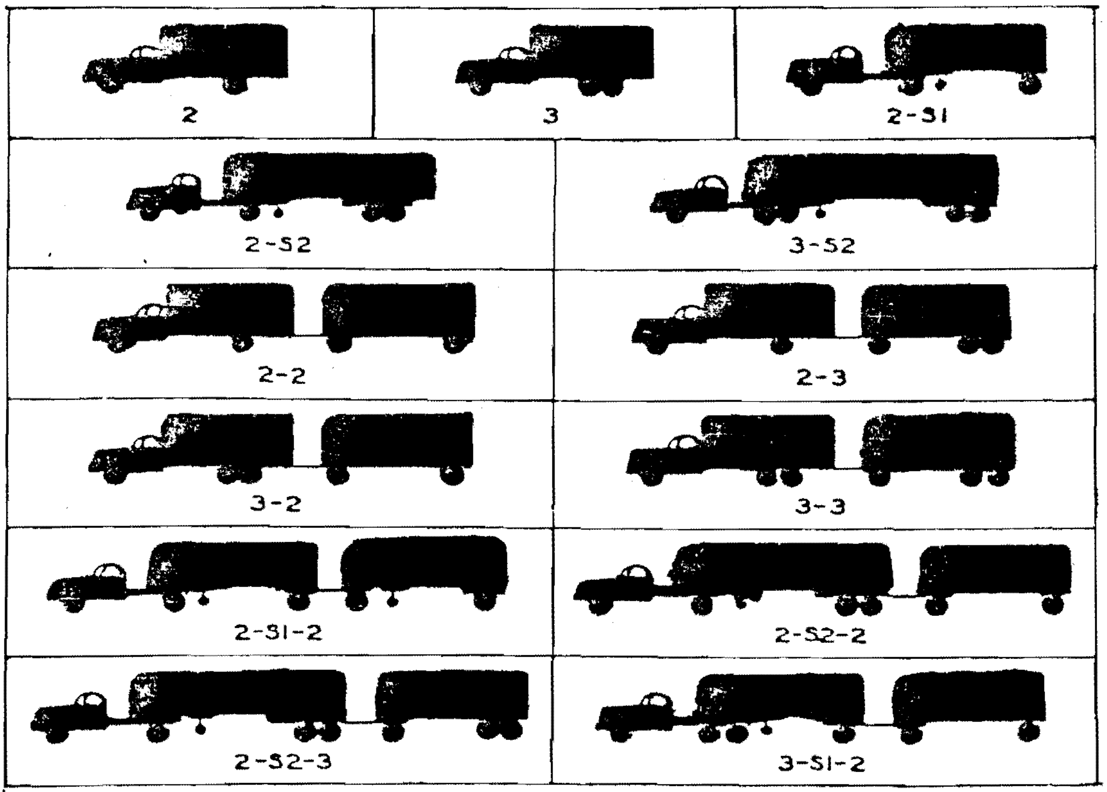

Figure 2. Common commercial vehicle types as designated by code based on axle arrangement.

PERFORMANCE PREDICTION VARIABLES

The performance prediction variables are related to measurements in the following three major categories:

1. Highway network statistics.

2. Representative design section structure.

3. Pavements older than the average age at terminal serviceability (POTTS).

Using these data and the AASHTO Interim Guide as a performance model, predictions of the time to overlay and thickness of overlay are made for the lane miles in each representative design section. All the input variables of this type are listed in Table 3.

Highway Network Statistics

The local, state, or federal agency using this procedure must select an appropriate number of representative structural sections to adequately model the typical designs of each network. For each representative structural section the total number of lane-miles must be determined, as well as the age of each mile where age is defined as the period of time since construction or major reconstruction and the beginning of the analysis period. These inputs can also be obtained from the Road Life and Road Inventory files of SDHPT.

Other variables required in this area of input are the present serviceability index (PSI) values. These variables may be input either constant for the system or individually for each representative section and include: initial PSI, terminal PSI, and PSI after overlay construction.

Representative Design Section Structure

For each representative design section certain information is required to characterize the remaining life of sections of each age. Variables required for representative sections, regardless of pavement type, include section title information, lane widths, regional factor (R), material type codes, and layer thicknesses (requirements vary for flexible and rigid pavements). Portland cement concrete (PCC) and composite pavements require composite soil support values (K), elastic modulus of concrete, and concrete flexural strength. The AASHTO continuity factors (J) for different PCC pavement types are built into the program as a function of the material type codes. An interesting option generated by the representative section input concept is that a state

TABLE 3. Performance prediction variables for a flexible pavement section.

	VARIABLE	TYPICAL VALUES	COMMENTS
1.	Lane width, ft.	12.0	
2.	Number of years for lane-mile data	30	30
3.	Lane mile - age distributions for each section	150.0 mile/10 yr.	
4.	PSI at initial construction and terminal condition	4.7/2.5	
5.	PSI after overlay	4.7	
6.	POTTS Maintenance costs $/lane mile/yr.	1800	
7.	Target fraction of POTTS	10.0	% of lane miles
8.	Percent of total lane miles never overlaid	5.0	
9.	District Number	17	One of district numbers if more than one district in representative section
10.	Highway Type	1	Interstate
11.	Type of pavement	1	Hot Mix
12.	Highway Classification	1	Rural
13.	Traffic Intensity	2	High
14.	Time between first and second overlay	8	For distressed pavements
15.	Assymptotic serviceability		User specified as 3.0
16.	Minimum overlay thickness	1	
17.	Maximum overlay thickness	6	

may use one representative structural section a number of times and vary the regional factor and/or other variables such as soil support to predict the costs of increased load limits by environmental regions or soil areas of interest within their jurisdiction. In fact any one variable may be changed and a new solution run by simply inputting one additional data card (see input guide in Appendix A).

Pavements Older Than Terminal Serviceability

Procedures have been developed for considering those lane-miles of pavement which at the time of evaulation have serviceability values lower than the system terminal PSI. Data concerning these pavements can be found in the National Highway Inventory and Performance Summary [10] or a DOT Report to the Congress [11]. These variables concerning pavement age at terminal PSI for each representative section type are used along with the performance equations to determine the number of lane-miles which is in need of rehabilitaiton during each year of the analysis period. Various other inputs in this area concern the manner in which the program models the life cycle of sections in POTTS. These variables include a POTTS operation switch, an overlay funding switch, a target fraction (percent of lane miles remaining below terminal PSI at end of analysis period) to express policy options, a percent of total lane-miles never overlayd, and annual projected overlay funds. Using these variables POTTS sections can be studies in three different ways:

1. The number of lane miles of POTTS remains constant for the entire analysis period. Those miles of roadway which begin the analysis period below terminal PSI remain in that condition. The cost of overlays on this section is zero since no overlays occur, however maintenance costs are considered.

2. The number of lane-miles of POTTS is changed gradually during the analysis period to obtain an input target percentage at the end of the analysis period. The choice of the target percentage can cause the lane-miles in POTTS to increase or decrease; however, the target percentage does not change within a run. The economic effects of these changes in the target percentage are predicted.

3. The number of lane-miles changes as a direct function of available overlay funds. If the cost of miles due for overlay exceeds the overlay funds available during any one year of the analysis period, the mileage in POTTS will increase. Likewise, if more overlay money is available than needed, some mileage will be brought out of POTTS and rehabilitated.

For any of the three POTTS options, the expected maintenance costs in dollars per lane-mile per year for POTTS mileage must be input.

ECONOMIC COST PREDICTION DATA

To predict the maintenance and rehabilitation costs associated with new size, and weight, of vehicles, RENU requires certain input costs. These data can typically be gathered from maintenance management systems and rehabilition cost records. Table 4 contains a list of variables, typical values,

TABLE 4. Economic cost prediction data.

	VARIABLE	TYPICAL VALUES	COMMENTS
1.	Percent paved shoulders	95.0	
2.	Average shoulder width per lane, feet	4.75	See Keyword Dictionary
3.	Unit cost of AC	66.00	\$/cy
4.	Unit cost of Granular Material	0.50	\$/cy
5.	Unit cost switches	1, 2, or 3	1 = \$/ton 2 = \$/cy 3 = \$/sy/in
6.	Unit cost of AC Patching, \$/sy	47.00	MODEL(2)
7.	Unit cost of AC Crack Sealing, \$/L.F.	.25	MODEL
8.	Unit cost of AC Base and Surface Repair, \$/cy	414.00	MODEL
9.	Surfacing Cost Index	11.8%	
10.	Maintenance Cost Index	9.0%	
11.	Unit cost of failure per lane mile	1,000	MODEL
12.	Number of failures at time of survey	3.86	MODEL
13.	Date of survey	8/75	MODEL
14.	Initial date of planning	12/90	MODEL

(2) MODEL - Required only for MODEL MAINTENANCE directive

Note: 1 lane mile = 1.61 lane km
1 foot = .305 m
1 pcf = 16 lb/m^3
1 sy = .91 m^2
1 cy = .76 m^3

and comments. The various required maintenance inputs are a function of the maintenance prediction model which can be either:

1. Prediction equations, or

2. Historical maintenance data from highway department records.

The forecasting of maintenance spending using either the prediction models or historical data can be accelerated for proposed traffic limits using the variable IARMS (accelerated routine maintenance spending switch).

Input information required for use of the historical model consists of arrays of costs that are based on past highway department experience. The average costs per lane-mile per year are input as a function of pavement type and age. The data may be changed for any system or representative pavement section.

Overlay cost predictions require the input of geometric, cost, and placement data. The geometric inputs include a percent of lane-miles which have paved shoulders, and the percentage of shoulders which are not paved (i.e. granular or soil). The asphalt and granular shoulder widths per lane-mile are the total shoulder width divided by the number of lanes. The following example shows the calculation of these variables:

Given: 100 miles, 4 lanes, shoulder widths of 4, 4, 10, and 10 feet, 50% paved and 50% granular.

250 miles, 2 lanes, shoulder widths of 8 and 8 feet, 60% paved and 40% turf.

The percent paved shoulders (PSS), average paved shoulder width (APSW), and average granular shoulder width (AGSW) are, therefore, calculated as:

$$PPS = \frac{100 \text{ mi.} \times .5 + 250 \text{ mi.} \times 6}{350 \text{ mi.}} \times 100$$

PPS = 57% and therefore 43% of the shoulders are unpaved

$$APSW = \frac{\frac{28 \text{ ft.} \times 100 \text{ mi.} \times .5}{4} + \frac{16 \text{ ft} \times 250 \text{ mi.} \times .6}{2}}{350 \text{ mi.}}$$

$$APSW = \frac{350 \text{ ft.-mi.} + 1200 \text{ ft.-mi.}}{350 \text{ mi.}}$$

$$AGSW = \frac{\frac{28 \text{ ft.} \times 100 \text{ mi.} \times .5}{4} + \frac{16 \text{ ft.} \times 250 \text{ mi.} \times .4}{2}}{350 \text{ mi.}}$$

$$AGSW = \frac{350 \text{ ft.-mi.} + 800 \text{ ft.-mi.}}{350 \text{ mi.}}$$

AGSW = 3.29 ft.

where 1 mile = 1.61 km, and 1 foot = .305 m.

Unit cost information for in-place asphalt concrete and granular material may be input in dollars per ton, dollars per cubic yard, or dollars per square yard per inch. The in-place unit cost of granular material should be lower if a large percentage of the shoulders in the granular class are actually soil or turf. The in-place densities of asphalt concrete and granular material are also required to predict the quantity of overlay material if unit costs are per ton.

For an average lane-mile of each representative section the user must develop both the present value of the existing pavement structure and the rate of decrease in that present value. The user may have available construction information that can be used to obtain the initial construction costs of the pavement structure. If this information is not readily available, an estimate can be made by using current bid information and adjusting it by the construction cost index between the present time and the year of initial construction. The engineer must then determine how much the pavement materials are worth today and also estimate the value of the remaining life of the structure. These calculations will not be easy and the state of the art is not very advanced; however, the best estimates of the present worth of the investment in the pavement structure is essential to a complete analysis. The engineer must then estimate what the rate of change of salvage value will be for the duration of the analysis period. This can most easily be done by analyzing the effects of time of the compound interest present worth factor. If the rate of change of salvage value is 1 percent per year, at the end of 20 years the salvage value is worth 82 percent of the value at the beginning of the period; if the rate of change is 2, 3, or 4 percent per year the salvage value is 67, 55, and 46 percent, respectively. These types of logical comparisons can assist the engineer in making estimates that are compatible with his own experiences.

The additional input parameters which affect economic predictions in program RENU are (1) the interest rate which is used for economic analyses, and (2) the length of the analysis period in years. The analysis period must be less than or equal to 20 years, and 20 years is the recommended value. If the Highway Cost Index is used for predicting funding amounts the interest rate used for the economic analyses should be the recommended interest rate plus the HCI to thus discount the effect of the index.

PROGRAM CONTROLS

Several input variables are needed to control RENU's operation. These variables are in the form of keyword directives as described in Appendix A. These keywords and their functions are:

-RUN- This keyword must be the first card of a data deck and the first directive after any 'EXECUTE' directive if any of the parameters on the 'RUN' card change. This begins program operation.

-SYSTEM TITLE- This keyword inputs a three card alpha-numeric title which is printed on the output to identify the solutions by system classification.

-EXECUTE- This keyword must be the last card of a problem set (of representative section data).

-OUTPUT- This keyword allows the user to choose the amount and type of output desired. It causes the program to summarize certain segments of the calculations as output.

-STOP- This keyword is the last data card of a data deck and it terminates the program operation.

These keyword directives along with all other keyword directives permit program users to tailor the use of RENU to a desired situation.

SUMMARY

All of the data described in this chapter are input through the use of keyword directives. Table 5 shows these keywords and the data area to which they pertain. The keywords themselves are somewhat descriptive of their associated data. In addition, the variable order of data input permits the user the option, after the complete data deck for the first solution, of inputting only those variables that differ from solution to solution. Additional data details are provided in the program input guide in Appendix A.

TABLE 5. Program RENU keyword directives.

KEYWORDS	DATA AREA[1]
AGE DISTRIBUTION	2
EMPTY	1
EXECUTE	4
FLEXIBLE	2
GVW	1
HISTORICAL MAINTENANCE	3
LOAD LIMITS	1
MODEL MAINTENANCE	3
NO MAINTENANCE	3
OLD SECTIONS	2
OUTPUT	4
OVERLAY	3
PERFORMANCE	2
RIGID	2
RUN PARAMETERS	4
SINGLE AXLES	1
STEERING AXLES	1
STOP	4
TANDEM AXLES	1
SYSTEM TITLE	4
TRIDEMS	1
TRUCK TYPE	1

(1) Data Area 1 = Traffic Data
2 = Network Design and Condition Data
3 = Maintenance/Rehabilitation Data
4 = Program Controls

PROGRAM CAPABILITY

Program RENU has the capability to model various sizes of highway network for which input data can be developed. The mileage of a network should be distributed based on functional classification (Interstate Urban, Interstate Rural, FM Urban, etc.), pavement structure (AC, PCC, or composite), and pavement age (time since construction or major reconstruction). A network may be divided into as many representative structural sections as is necessary to adequately characterize the network. The lane-miles of each representative section are distributed by pavement age. Program RENU predicts pavement performance and related costs for both present and proposed traffic loadings for all lane-miles of each pavement age of each representative section. RENU can consider up to eight systems, each having a maximum of ten representative sections.

Instructions to RENU are supplied in the form of directives, each of which occupies an entire card. The first twenty characters of each directive contain a "keyword" identifying the type of information being entered. All relevant information must be supplied for the first problem of a run via the various directives. Subsequent problems in the same program execution need only specify directives which are to be changed, since all other variable values will be retained from the preceding problem. Some directives require additional data cards which are placed immediately after the card on which the keyword directive appears.

The major capabilities of RENU include:

1. The ability to handle up to a maximum of ten representative sections for each system.

2. The ability to make predictions with the total paylod per year under present and proposed limits either equal or unequal.

3. Different maintenance cost models can be used for each representative section.

4. A traffic stream mix of up to 10 types of trucks can be considered for both present and proposed regulations.

5. The percent of each truck type as a percent of all vehicles can vary by year in the analysis period.

6. Pavement performance predictions are based not only on pavement structure and traffic but also on existing pavement age.

7. Overlay cost predictions include necessary costs to bring the shoulders up.

8. Remaining network functional life in terms of remaining 18-kip (80 kN) ESAL at the end of the analysis period provides information on structural condition of the systems.

9. The expected economic consequences of various proposed legal limits changes on maintenance and rehabilitation, and salvage value, are predicted and summarized by section, by system classification, and for the entire network.

10. A number of rehabilitation options is available to the user for pavements older than terminal serviceability (POTTS).

11. Stacking and solution of numerous different problems is possible through the flexible input order of Program RENU.

12. Asphalt concrete, portland cement concrete, and composite pavements may be considered in any problem.

13. The effect of new truck types and multiple trailer configurations can be modeled using vehicle designations and equivalency factors for single axles, steering axles, tandem axles, and triaxles.

14. A modified NCHRP load distribution shifting procedure has been included in RENU.

SUMMARY OF INPUT INFORMATION REQUIRED

Although no special field or laboratory studies are required, the use of RENU requires much data from highway agency records. The information required to determine input values for RENU is summarized as follows:

1. Traffic and load survey information includes traffic stream makeup, truck types, single-axle load distributions, tandem-axle load distributions, tridem-axle load distributions, steering-axle distributions, gross vehicle weight distributions, empty vehicle weights, and legal limits. This information can be used to estimate the growth in 18-kip (80-kN) ESAL.

2. Performance prediction information includes highway network statistics, in particular mileage breakdowns by pavement type, pavement age, and system classification; also, representative design section structural information.

3. Economic prediction data include unit cost information, historical maintenance expenditures, geometric dimensions, interest rates, pavement types, present worth of the existing representative sections and the rate of change of salvage value for each.

The problem in Chapter 4 and the typical values of variables given in Chapter 2 provide realistic values for sample input; however, these are merely representative data and specific data should be developed for each prediction desired.

RENU OUTPUT CAPABILITY

Program RENU has four output options available for use, depending on the degree of detail desired. These options are described in the Keyword

Dictionary under keyword -OUTPUT-. Keyword -OUTPUT- can be changed for each representative section if desired. Basically output predictions are provided for all representative sections and summarized by system and for the entire network. The point at which the preceding results are summarized is defined through input of the -SYSTEM TITLE- keyword. This keyword implies that a new system and its representative section information are being input and that summaries for previous representative sections should be prepared.

The first of the four output options (Option 0) is a default option because if keyword -OUTPUT- is not used certain information is always printed out. This output includes all input information and summary results. The summary results provide maintenance and rehabilitation cost differences and cost ratios between proposed and present legal limits. Maintenance and rehabilitation costs are printed out for each year in the analysis period. The data are provided for all representative sections and summarized by system. These costs are presented in three forms: unadjusted, present worth, and uniform annual cost. The various other output options are as follows:

Option 1: All the default information is output plus performance tables, POTTS tables, and summary cost tables.

The performance table contains information for each pavement age concerning number of lane miles overlaid each year, overlay thickness, PSI at the beginning and end of analysis period, remaining 18-kip (80-kN) ESAL at end of analysis period, and cost of overlay in dollars per lane mile. This information is supplied for present and proposed limits. The POTTS tables contain similar information for pavements which have already reached terminal serviceability before the beginning of the analysis period. The summary cost tables contain a summary of undiscounted maintenance and rehabilitation costs by year in the analysis period for both present and proposed legal limits.

Option 2: All information of Option 1 is supplied with summary payload and 18-kip (80-kN) ESAL information.

The additional information consists of payloads and number of 18-kip (80-kN) ESAL for an average truck of each type, and the ratio (for each year) of ESAL per year under proposed limits to ESAL per year under present limits. This ratio summarizes in one number the effect of load limit changes on the damage generation potential for each truck type.

Option 3: All information of Option 2 is supplied plus a listing of the weight distributions resulting from the application of the shifting procedure.

These shifted weighted data shows the shifted load distributions in 2000-lb (908-kg) weight intervals for single axles, tandem axles, tridem axles, and steering axles.

Basically, keyword -OUTPUT- is most useful for a diagnostic study to insure summary output validity and reasonableness based on the availability of input data, calculations, and decision criteria. This is often useful because the predicted effects of changing parameters on "delta costs" are not always obvious, and can be quite data-specific.

INPUT GUIDE

Program RENU was designed so that the required data are input in a simple yet logical manner; problems dealing with nearly similar situations can be handled easily by providing for successive problems after the first, only those directives (data input cards) containing the data which are changed. For any one problem the directives can appear in any order, except that the -RUN PARAMETERS- directive must begin the data deck, and a -STOP- directive must follow the data for the last problem. An input guide describing the full use of RENU appears in Appendix A. The Input Guide contains not only card images and definitions but an alphabetical listing and description of all the keywords. Table 6 contains a sample ordering of the keywords to demonstrate how subsequent problems may be stacked in one run of program RENU.

TABLE 6. Sample keyword ordering.

KEYWORDS	COMMENTS
RUN PARAMETERS	
SYSTEM TITLE	
FLEXIBLE	First Representative Interstate Flexible Section
AGE DISTRIBUTION	Salvage Value Information Also Included
TRUCK TYPE	Interstate Truck Data
LOAD LIMITS	Interstate Truck Data
STEERING AXLES	Interstate Truck Data
SINGLE AXLES	Interstate Truck Data
TANDEM AXLES	Interstate Truck Data
TRIDEMS	Interstate Truck Data
GVW	Interstate Truck Data
EMPTY	Interstate Truck Data
PERFORMANCE	
OVERLAY	
MODEL MAINT	EAROMAR Maintenance Model Used
OLD SECTIONS	Handling of POTTS Sections
EXECUTE	Run 1st Representative Section
FLEXIBLE	Second Representative Interstate Flexible Section
AGE DISTRIBUTION	
EXECUTE	
RIGID	First Representative Interstate Rigid Section
AGE DISTRIBUTION	
OVERLAY	Overlay Parameters Changed
EXECUTE	
RIGID	Second Representative Interstate Rigid Section
AGE DISTRIBUTION	
EXECUTE	
SYSTEM TITLE	Beginning of Second Classification System
FLEXIBLE	Representative Primary Flexible Section
AGE DISTRIBUTION	
TRUCK TYPE	Primary Truck Data (Different than Interstate)
LOAD LIMITS	Primary Truck Data (Different than Interstate)
STEERING AXLES	Primary Truck Data (Different than Interstate)
SINGLE AXLES	Primary Truck Data (Different than Interstate)
TANDEM AXLES	Primary Truck Data (Different than Interstate)
GVW	Primary Truck Data (Different than Interstate)
EMPTY	Primary Truck Data (Different than Interstate)
PERFORMANCE	
OVERLAY	
HISTORICAL MAINT	Maintenance Model changed for Primary Sections
OLD SECTIONS	
EXECUTE	
RIGID	Representative Primary Rigid Section
AGE DISTRIBUTION	
EXECUTE	
OUTPUT	
STOP	

CHAPTER 4

ILLUSTRATIVE SAMPLE PROBLEM

Program RENU contains numerous input data and solution output capabilities. An illustrative sample problem is presented which covers many of these options. This chapter reviews the input data requirements, output forms, and results of this illustrative problem.

The illustrative problem represents the type of RENU solution which would be required to analyze an Interstate system with two representative sections. All of the data used for the problem were gathered during visits with SDHPT personnel conducted during this project. None of the safety implications of the vehicles are considered in RENU, only their effects on the pavement.

ILLUSTRATIVE PROBLEM INPUT DATA

Input data should be arranged according to a system classification and representative section hierarchy. In the illustrative problem, the only highway network classification system is the Interstate. For this system there are two different sections used to represent the lane mileage of the system.

RENU has the capability to handle eight systems and a maximum of ten sections per system in a single solution. The program can use different loadometer data for every representative section if the user has such data; however, the axle load distribution information is more system dependent as evidenced by the forms used for reporting those data in the W-4 and W-5 tables.

All input information is printed in the output in two forms to assist the user. First, an echo print of the data cards exactly as punched is provided to assist the user in locating data punching and arrangement errors. Secondly, these data are repeated in a "report form," which is easier to decipher and could be used more effectively in reporting. These two data forms are printed successively for each representative section, one at a time. Appendix C contains an echo print from the illustrative problem input data and the "report form" output of all data for the illustrative problem. These figures show that the traffic data are quite extensive. If the data remain the same in successive problems as a previous representative section, for example keywords LOAD LIMITS, SINGLE AXLES, TRUCK TYPE, GVW, PERFORMANCE, etc., these data are held constant and need not be reinput. Conversely, if the user desires to change in the information contained on any keyword directive only that keyword needs to be input between two -EXECUTE- keywords. A solution will be prepared which is different from a preceding solution by only those factors that are changed for the directive.

ILLUSTRATIVE PROBLEM OUTPUT

Program RENU can provide different amounts of output for each representative section as desired by the user. Using the output options of keyword -OUTPUT- as defined in Chapter 3 various amounts of printed output can be obtained. The input data (previously discussed) and cost differences and cost ratios of the network under present and proposed legal limits are always printed for each solution. These differences and ratios are presented for each representative section, and summarized for each system and the total network using unadjusted, present worth, and average annual cost bases. The summary output for the illustrative problem is also contained in Appendix C.

Other output options are as follows:

Option 1: All regular information plus a performance table for all representative sections and a summary of predicted costs.

Option 2: All Option 1 output plus a summary table of payload per truck type and a ratio of the final 18-kip (80-kN) ESAL per year for proposed and present legal limits.

Option 3: All Option 2 output plus the shifted weight distributions summarized in 2000-lb. (908-kg) intervals.

Appendix C contains output Option 1, 2, and 3 results, respectively, for the illustrative problem. These outputs are considered useful for both program verification and detailed analyses of those items which significantly affect the output. The default output which is always printed is considered to be the type of information most of interest to the user.

DISCUSSION OF ILLUSTRATIVE PROBLEM RESULTS

The illustrative problem has the following conditions:

1. One system - Interstate
2. Two representative sections - flexible and rigid
3. Analysis period - 18 years
4. Calculations based on
    a. Equal payload under present and proposed limits
    b. Model maintenance - accelerated
    c. Old sections - target value of 10%

5. Four truck types (See Figure 5)

   a. 2D

   b. 3A

   c. 3-S2

   d. 2-S1-2

6. Legal load changes

a.	Single axle	20 to 22.4 kips (89 to 99 kN)
b.	Tandem axle	34 to 36 kips (151 to 160 kN)
c.	Gross weight	80 to 120 kips (356 to 534 kN)

Appendix C contains the summary output information which is of most importance. The total predicted additional cost of allowing new increased vehicle loads is $4,738,000 in present worth terms for an eighteen-year analysis period.

In a uniform annual cost context, the increased cost of maintenance and rehabilitation on the 48 lane miles (72 km) of flexible pavements is approximately $604 per lane mile more annually, and for the 499 lane miles (803 km) of rigid pavement the costs are increased $1575 per lane mile more annually. On a system basis, this is weighted value of approximately $1489 per lane mile more annually.

Appendix C contains much detailed information concerning the calculation of the summary costs contained in the output. Five major tables for each of the representative sections are given including:

1. Performance tables under present and proposed regulations.
2. POTTS tables under present and proposed regulations.
3. A breakdown of the undiscounted total costs by section, system and overall.
4. The survivor curve results.
5. Predicted increased payloads and number of 18-kip (80-kN) by truck type.
6. Final axle load distribution shifts obtained by applying the NCHRP procedure. These can be compared with the input distributions to see the effect of the axle load distribution shifting procedure.

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9. Manual of Procedure for Conduction Studies of the Desirable Limits of Dimensions and Weights of Motor Vehicles," FHWA-RD-73-68, July 1970.

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APPENDIX A

PROGRAM RENU INPUT GUIDE

Instructions to RENU are supplied in the form of directives which occupy an entire card. The first twenty characters of each directive contain a keyword identifying the type of information being entered. All keywords may be abbreviated to their first four characters, the rest of the identifier is ignored. Keywords must begin in column one. All integers must be right justified.

The -RUN PARAMETERS- directive must be the first data input directive. The last card of the input data must be the -STOP- directive. More than one problem may be solved in a single execution of the program. Each problem must have an -EXECUTE- directive as the last directive. This directive informs the program that all data for the problem have been read. Other directives may appear in any order with the exception that the -TRUCK TYPE- directive must precede the -LOAD LIMITS-, -STEERING AXLES-, -SINGLE AXLES-, -TANDEM AXLES-, -TRIDEMS-, -GVW-, and -EMPTY- directives. If the user desires to consider both steering axles and no steering axles within a run, all problems which do not consider steering axles must set the number of axles code on the -TRUCK TYPES- directive to zero. All relevant information must be supplied for the first problem of a run via the various directives explained herein. Subsequent problems in the same program execution need only specify directives which are to be changed, because all other values will be retained from the preceding problem. All data on a single directive must be supplied, however, even if only one number is being changed.

All directives share a common format, but the meanings of the fields differ depending on the keyword identifier. These specific meanings are described for each appropriate keyword. The general format is as follows:

Field Name	Column Number	Type of Value	Format used
Keyword	1-20	Alphanumeric	5A4
IVAL(1)	21-25	Integer	I5
IVAL(2)	26-30	Integer	I5
VAL(1)	31-40	Real	F10.0
VAL(2)	41-50	Real	F10.0
VAL(3)	51-60	Real	F10.0
VAL(4)	61-70	Real	F10.0
VAL(5)	71-80	Real	F10.0

Some directives require additional data cards which are placed immediately after the card on which the directive appears. The cards are read in varying formats. Refer to the coding instructions for specific card formats. As many cards as are necessary to provide the set of input values should be supplied. It should be noted that some of the fields provided on a card may be blank.

KEYWORD: RUN PARAMETERS*

DIRECTIVE (one card)

	NYAP	IEQTRP	AGR	RTINT	XHCIO	XHCIM	
RUN PARAMETERS	15	15	F10.0	F10.0	F10.0	F10.0	
1	20	25	30	40	50	60	70

NYAP - Number of Years in the Analysis Period, ≤ 20, (right justified)

IEQTRP - 18-kip (80-kN) Equivalent Single Axle Loads (ESAL) Analysis Method Switch, (right adjusted)
= 0: 18 kip (80-kN) ESAL analysis based on trucks carrying equal total payload under present and proposed load limits
= 1: 18-kip (80-kN) ESAL analysis method based on trucks making the same number of trips (unequal total payload) under the two sets of load limits
(for further explanation see the Keyword Dictionary, pg.)

AGR - Annual Growth Rate in 18-kip (80-kN) Equivalent Single Axle Loads (percent per year)

RTINT - Interest Rate used for economic analysis (percent per year)

XHCIO - Surfacing Cost Index (express in decimal form)

XHCIM - Maintenance Material Cost Index (express in decimal form)

*Must be the first directive of the data deck and the first directive after any -EXECUTE- directive if NYAP, IEQTRP, AGR, or RTINT are to be changed, except that only the -SYSTEM TITLE- directive may precede this directive.

KEYWORD: SYSTEM TITLE

DIRECTIVE (one card required for each highway system)

SYSTEM TITLE	
1	20

PROBLEM AND SYSTEM IDENTIFICATION (three cards required)

TITLE	
20A4	
1	80

TITLE - Alphanumeric Problem and System Title and all identifying information to be printed on each page of output

KEYWORD: FLEXIBLE (omit if -RIGID- directive is used)*

DIRECTIVE (one card)

		WLANE		PF	PFO
FLEXIBLE		F10.0		F10.0	F10.0
1–20	31	40	60	70	80

WLANE - Lane Width (feet)

PF - Assymptotic serviceability index

PFO - Assymptotic serviceability index for overlay

SECTION DESCRIPTION (one card required)

SECTTL
20A4
1–80

SECTTL - Alphanumeric Section Title to identify each representative section in the output. The first eight columns should contain an eight letter alphanumeric label which will be used in abbreviated prints

*Only one representative section can be placed between -EXECUTE- keywords. Therefore either -RIGID- keyword or -FLEXIBLE- keyword is used but not both for any one problem.

FLEXIBLE PAVEMENT DESCRIPTORS (one card)

NDIST	NIS	NPT	NRU	NLH	NDEL	TPE	MNOVTK	MXOVTK					
I5	I5	I5	I5	I5	I5	I5	I5	I5					

1

NDIST	District Number. If more than one district is in the section, include the number of one of the districts within the group
NIS	Indicator 1. Interstate 2. FM 3. US or State
NPT	Type of Pavement* 1. Hot Mix 3. Surface treated 4. Overlaid
NRU	Indicator 1. Rural 2. Urban
NLH	Indicator 1. Low traffic intensity 2. High traffic intensity
NDEL	Estimated timed between overlays for distressed pavements
TPE	Flag 0 - PF, PFO given 1 - Use Texas Performance Equations Option
MNOVTK	Minimum overlay thickness
MXOVTK	Maximum overlay thickness

* Pavement type 2 is Thick Hot Mix and pavement type 5 is Hot Mix on Black Base; however, since these pavement types are such a small proportion of the Texas highway network, survivor curves have not been included in RENU.

MATERIALS (one card required; up to four layers; place surface layer first and proceed down into structure; Format specification is 4(A3, 2x, 2F5.0, 1x))

MCODE	THICK	STRC	MCODE	THICK	STRC	MCODE	THICK	STRC	MCODE	THICK	STRC
A3	F5.0	F5.0	A3	F5.0	F5.0	A3	F5.0	F5.0	A3	F5.0	F5.0
1 3	6	11	17	22	27	33	38	43	49	54	59

MCODE - Material Code

ACP - Asphalt Concrete Pavement
ATB - Asphalt Treated Base
AGB - Aggregate Base
CTB - Cement Treated Base
SAB - Sand Asphalt Base
LTB - Lime Treated Base
AGS - Aggregate Subbase
LTS - Lime Treated Subbase

THICK - Layer Thickness (inches) (Layer thicknesses for representative sections will be used if left blank)

STRC - Structural Coefficient (if blank, default is used; refer to Table 7)

(FOR FLEXIBLE PAVEMENTS INSERT BLANK CARD)

Table 7. AASHTO structural coefficients.

MATERIAL TYPE	MATERIAL CODE	AASHTO STRUCTURAL COEFFICIENTS
Asphalt Concrete Pavement	ACP	.44
Jointed Concrete Pavement	JCP	
Continuously Reinforced Pavement	CRC	
Asphalt Treated Base	ATB	.34
Aggregate Base	AGB	.14
Cement Treated Base	CTB	.23
Sand Asphalt Base	SAB	.30
Lime Treated Base	LTB	.18
Aggregate Subbase	AGS	.11
Lime Treated Subbase	LTS	.14

KEYWORD: RIGID (omit if -FLEXIBLE- directive is used)*

DIRECTIVE (one card)

		WLANE	XK	AGG	E	DISTCT
RIGID		F10.0	F10.0	F10.0	F10.0	F10.0
1–20		31–40	50	60	70	80

WLANE - Lane Width (feet)

XK - Composite Support Value, k (pci)

AGG - Type of aggregate (0=Siliceous river gravel, 1=Limestone)

E - Modulus of Concrete (psi), DISTCT - District number

SECTION DESCRIPTION (one card required)

SECTTL
20A4
1–80

SECTTL - Alphanumeric Section Title to identify each representative section in the output. The first eight columns should contain an eight letter alphanumeric label which will be used in abbreviated prints.

*Only one representative section can be placed between -EXECUTE- keywords. Therefore either -RIGID- keyword or -FLEXIBLE- keyword is used but not both for any one problem.

MATERIALS (one card required; up to four layers; Format specification is 4 (A3, 2x, 2F5.0, 1x)**

MCODE	THICK	MCODE	THICK	MCODE	THICK	MCODE	THICK
A3	F5.0	A3	F5.0	A3	F5.0	A3	F5.0
1 3	6 10	17	22	33	38	49	54

MCODE - Material Code
JCP = Jointed Concrete Pavement
CRC = Continuously Reinforced Concrete
(also, any applicable material codes under the -FLEXIBLE- directive)**

**The input of ACP and a thickness for the first layer, followed by a CRC or JCP layer, will key the procedure to consider the section as composite. The asphalt and rigid layer thicknesses will be converted to an equivalent thickness of rigid material.

KEYWORD: SINGLE AXLES

DIRECTIVE (one card)

1–20	NLDI (21–25)	(26–30)	STARTS (31–40)
S I N G L E A X L E S	I5		F10.0

NLDI - Number of Load Intervals in the Single Axle Load Distribution Array, ($\leq$30)(right justified).

STARTS - Beginning of First Load Interval for Single Axle Load Distribution Array

SINGLES (NLDI cards required; maximum of 30 intervals)

ELDINT	SA (10)									
F10.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0
1–10	11–17	18–24	25–31	32–38	39–45	46–52	53–59	60–66	67–73	74–80

ELDINT - Load at Upper End of Load Interval

SA - Number of Single Axles Weighed within this Interval by Truck Type (order of input must conform to order of truck type labels following the -TRUCK TYPE- directive)

KEYWORD: AGE DISTRIBUTION

DIRECTIVE (one card)

AGE DISTRIBUTION	NASL	ISLV	FLRP
AGE DISTRIBUTION	I5	I5	F10.0
1–20	25	30	40

NASL - Number of Years for which Lane-Mile Data is Provided, ≤ 30 (right justified).

ISLV - Salvage Value Switch
- 0 - No salvage value data read; no salvage value computations
- 1 - Read NASL values of material value and NASL values of rate of loss of value; calculate salvage value at beginning of analysis period and at the end under both present and proposed regulations.

FLRP - Factor by which the loss rate is to be multiplied for any mileage going into POTTS (Pavement Older Than Terminal Serviceability). If no value is provided, a default is selected from an internal table based on the input value of terminal PSI, PTERM.

MILEAGE (one or two cards required)

XLM (I)

F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0
1 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	

XLM - Number of Lane Miles for Pavement Ages 1 through NASL (First card must have at least one non-zero entry)

VALUE (one or two cards required)

VI (I)

F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0
1 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	

VI - Material value of existing pavement, estimated at the beginning of the analysis period. One value for each pavement age, in thousands of dollars per lane mile. (Read only if ISLV > 0)

LOSS RATE (one or two cards required)

RI (I)

F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0	F5.0
1 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75

RI - Rate of loss of value, percent per year, for each pavement age.
(Read only if ISLV > 0)

KEYWORD: TRUCK TYPE (must precede -LOAD LIMITS-, -STEERING AXLES-, -SINGLE AXLES-, -TANDEM AXLES-, -TRIDEMS-, -GVW-, and -EMPTY- directives)

DIRECTIVE (one card)

	NTTY	NATT	PERCT(1)	(2)	(3)	PERCT(4)	
TRUCK TYPE	15	15	F10.0	F10.0	F10.0	F10.0	
1	20	25	30	40	50	60	70 80

NTTY - Number of Truck Types (≤ 10) (right adjusted)

NATT - Number of Truck Types Added During Analysis Period (≤ 10-NTTY). If NATT > 0: read a second set of truck percent data for proposed regulations (see Keyword Dictionary, pg. 89)

PERCT(i) - Percentage of each truck type (2D, 3A, 3-s2, 2,S1-2, respectively) which is shifted.

LABEL (maximum of 2 cards; Format specification 8(2A4, 2x))

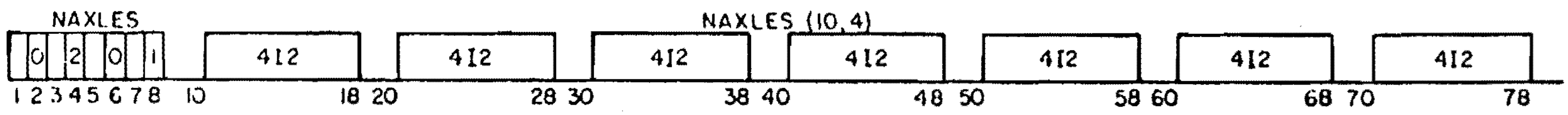
TTYP(2 NTTY + NATT)

2A4		2A4		2A4		2A4		2A4		2A4		2A4		2A4	
1	8	11		21		31		41		51		61		71	

TTYP - AASHTO Truck Type Notation for Vehicle Axle Arrangement*
(up to ten truck types, eight on first card and two on second card)

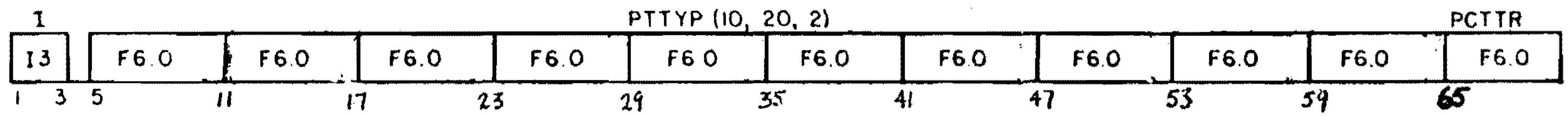
*See Recommended Policy of Maximum Dimensions and Weights of Motor Vehicles to be Operated Over the Highways for the United States, American Association of State Highways and Transportation Officials, 1974.

AXLES (maximum of 2 cards; Format specification (I3, 1x, 11F6.0))



NAXLES - Number of Single, Tandem, Tridem and Steering Axles per Truck by Truck Type (see Keyword Dictionary, pg. 89 for a sample input). Numbers must be right justified intergers. First Field has example input for 3-S2

TRUCK DATA (one card for each analysis year required; Format specification 8(4I2, 2x))



I - Analysis Year (right adjusted)

PTTYP - Percent of Given Truck Type as a <u>Percentage</u> of all Vehicles

PCTTR - Percent of all Trucks as a <u>Percentage</u> of all Vehicles

KEYWORD: LOAD LIMITS

DIRECTIVE (one card)

	IEWS
LOAD LIMITS	I5
1 – 20	25

IEWS - Empty Weight Switch
=0: omit WEIGHT INCREASE card
>0: read WEIGHT INCREASE card

WEIGHT LIMITS (two cards required; first card must contain present limits a-d second card must contain proposed limit)

PGVWL	PSAL	PTAL	PTRAL
F10.0	F10.0	F10.0	F10.0
10	20	30	40

PGVWL - Groww Vehicle Weight Limit (kips)

PSAL - Single Axle Legal Load Limit (kips)

PTAL - Tandem Axle Legal Load Limit (kips)

PTRAL - Tridem Axle Legal Load Limit (kips)

STEERING WEIGHT (two cards required; first card must contain present limits; second card must contain proposed limits)

PSTAW (10,2)

F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0
1 8	16	24	32	40	48	56	64	72	80

PSTAW - Steering Axle Weight by Truck Type (kips)(first field corresponds to first truck type)

WEIGHT INCREASE (one card required if IEWS>0)

EPI (10)

F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0	F8.0
1 8	16	24	32	40	48	56	64	72	80

EPI - Percentage Increase of Empty Vehicle Weight from Present to Proposed Weights Limits (first field corresponds to first truck type)
This card is read if IEWS>0

KEYWORD: TANDEM AXLES

DIRECTIVE (one card)

TANDEM AXLES	NLDI		STARTS
T A N D E M A X L E S	I5		F10.0
1 – 20	25		31 – 40

NLDI - Number of Load Intervals in the Tandem Axle Load Distribution Array ($\leq$30)(right justified).

STARTS - Beginning of First Load interval for Tandem Axle Load Distribution Array

TANDEMS (NLDI cards required; maximum of 30 intervals)

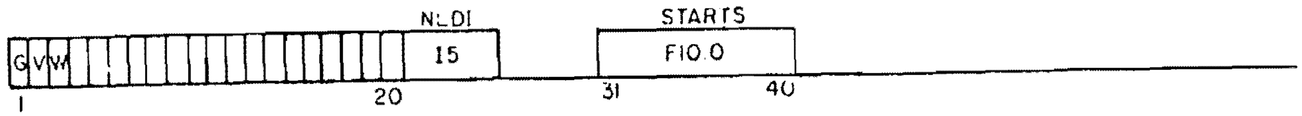
ELDINT	TA (10)									
F10.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0
1 – 10	17	24	31	38	45	52	59	66	73	80

ELDINT - Load at Upper End of Load Interval

TA - Number of Tandem Axles Weighted within this Interval by Truck Type (order of input must conform to order of truck type labels following the -TRUCK TYPE- directive)

KEYWORD: GVW

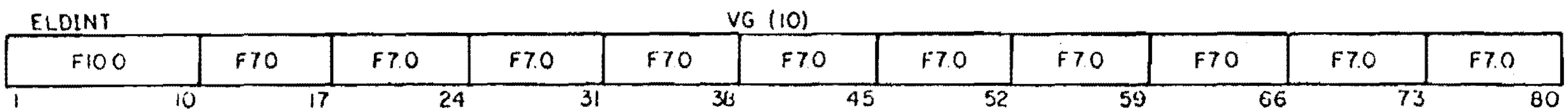
DIRECTIVE (one card)



NLDI - Number of Load Intervals in the Gross Vehicle Weight Load Distribution Array, ($\leq$75) (right adjusted)

STARTS - Beginning of first load interval in the Gross Vehicle Weight Load Distribution Array

GROSS (NLDI cards required; maximum of 75 intervals)



ELDINT - Load at Upper End of Load Interval

VG - Number of Trucks with Gross Vehicle Weight in this Interval by Truck Type (order of input must conform to order ot truck type labels following the -TRUCK TYPE- directive)

KEYWORD: EMPTY

DIRECTIVE (one card)

	NLDI	STARTS
E M P T Y	I5	F10.0
1 20		31 40

NLDI - Number of Load Intervals in the Empty Load Distribution Array, ($\leq$ 30)(right justified).

STARTS - Beginning of first load interval in the Empty Load Distribution Array

EMPTY VEHICLES (NLDI cards required; maximum of 30 intervals)

ELDINT	VE (10)									
F10.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0
1 10	17	24	31	38	45	52	59	66	73	80

ELDINT - Load at Upper End of Load Interval

VE - Number of Trucks with Empty Vehicle Weight in this Interval by Truck Type (order of input must conform to order ot truck type labels following the -TRUCK TYPE- directive)

KEYWORD: STEERING AXLES (optional)

DIRECTIVE (one card)

	NLDI		STARTS	
STEERING AXLES	I5		F10.0	
1–20	25		31–40	

NLDI - Number of Load Intervals in the Steering Axle Load Distribution Array, ($\leq$30)(right justified)

STARTS - Beginning of First Load Interval in the Steering Axle Load Distribution Array

STEERING AXLES (NLDI card required; maximum of 30 intervals)

ELDINT	ST (10)									
F10.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0
1–10	17	24	31	38	45	52	59	66	73	80

ELDINT - Load at Upper End of Load Interval

ST - Number of Steering Axles Weighed within this Interval by Truck Type (order ot input must conform to order ot truck type labels following the -TRUCK TYPE- directive)

KEYWORD: TRIDEMS (optional)

DIRECTIVE (one card)

TRIDEMS	NLDI		STARTS
T R I D E M S	I5		F10.0
1 – 20	25		31 – 40

NLDI - Number of Load Intervals in the Tridem Axle Load Distribution Array, ($\leq$50)(right justified).

STARTS - Beginning of First Load Interval in the Tridem Axle Load Distribution Array

TRIDEM AXLES (NLDI cards required; maximum of 50 intervals)

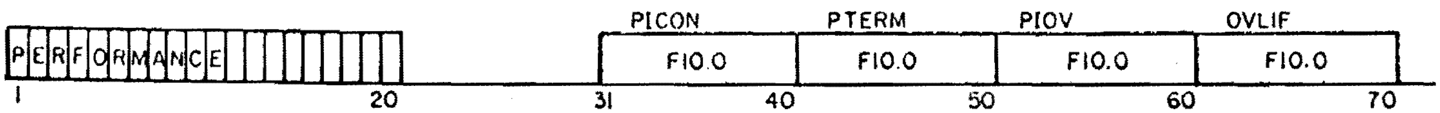
ELDINT	TR (10)									
F10.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0	F7.0
1 – 10	17	24	31	38	45	52	59	66	73	80

ELDINT - Load at Upper End of Load Interval

TR - Number of Tridem Axles Weighed within this interval by Truck Type (order of input must conform to order of truck type labels following the -TRUCK TYPE- directive)

KEYWORD: PERFORMANCE

DIRECTIVE (one card)

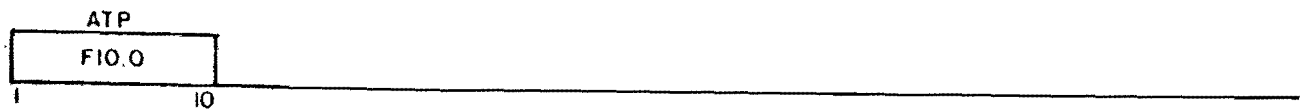


PICON - PSI at Initial Construction

PTERM - PSI Terminal

PIOV - PSI after Overlay

OVLIF - Overlay Design Life (years); if left blank defaults to 20 years



ATP - Average Age at Terminal PSI (age at which 50% of the pavements have been overlaid) for a Representative Section (years) (default is 20.0)

KEYWORD: OVERLAY

DIRECTIVE (one card)

	ICAC	ICGR	
OVERLAY	15	15	
1 — 20	25	30	

ICAC - Switch for Units on Asphalt Concrete Unit Cost (right adjusted)

ICGR - Switch for Units on Granular Base Unit Cost (right adjusted)

1 = $/ton
2 = $/cy
3 = $/sy/in

MISC. DATA (one card required)

PPVDSH	WPSH	WGSH	CAC	CGR	ACDENS	GRDENS	
F10.0	F10.0	F10.0	F10.0	F10.0	F10.0	F10.0	
1 — 10	20	30	40	50	60	70	80

PPVDSH - Percent Paved Shoulders

WPSH - Average Paved Shoulder Width per Lane (feet), see example calculation Chapter 3

WGSH - Average Granular Shoulder Width per Lane (feet), see example calculation Chapter 3

CAC - Unit Cost of AC (units based on ICAC)

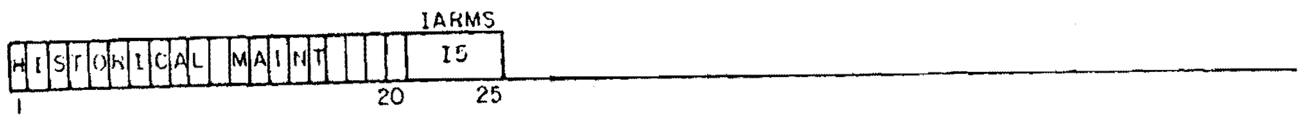
CGR - Unit Cost of Granular Material (units based on ICGR)

ACDENS - Density of Compacted AC (pcl)(required only 11 ICAC - 1)

GRDENS - Density of Compacted Granular or Turf Material (pcl)(required only 11 ICGR - 1)

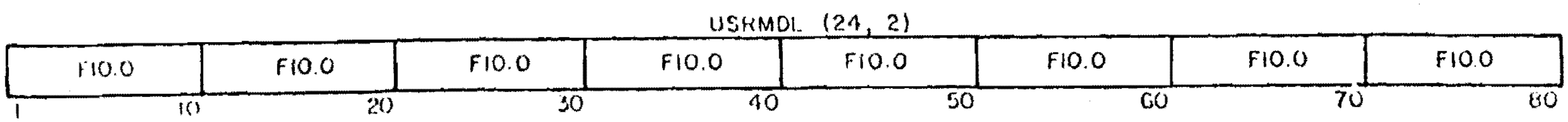
KEYWORD: HISTORICAL MAINT (omit if -MODEL MAINT- or -NO MAINT- directive is used)*

DIRECTIVE (one card)



IARMS - Accelerated Routine Maintenance Spending Switch (right justified).
= 0: do not accelerate
= 1: accelerate

COST DATA (24 cost values for each pavement structure)



USRMDL - Historical Maintenance Costs in Dollars per Lane Mile, by Age, in order of increasing age for Flexible and Rigid pavement (read flexible pavement maintenance costs followed by rigid pavement maintenance costs)

*Only one maintenance model may be used for each representative section. If one model is applicable for all sections this data need by input only with first representative section.

KEYWORD: NO MAINT (omit if -MODEL MAINT- or -HISTORICAL MAINT- directive is used)*

DIRECTIVE (one card)

N	O		M	A	I	N	T												
1																			20

*Only one maintenance model may be used for each representative section. If one model is applicable for all sections this data need be input only with first representative section.

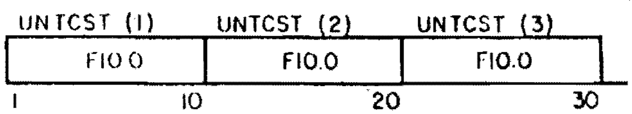
KEYWORD: MODEL MAINT (omit if -HISTORICAL MAINT- or -NO MAINT- directive is used)*

DIRECTIVE (one card)

IARMS - Accelerated Routine Maintenance Spending Switch (right justified).
= 0: do not accelerate
= 1: accelerate

COST DATA (two cards required)

Card 1: Cost Data for Flexible Pavement



UNTCST(1) - Unit Cost of Bituminous Patchnig ($/sy)

UNTCST(2) - Unit Cost of Bituminous Crack Sealing ($/linear foot)

UNTCST(3) - Unit Cost of Bituminous Base and Surface Repair ($/cy)

*Only one maintenance model may be used for each representative section. If one model is applicable for all sections this data need be input only with first representative section.

Card 2: Cost Data for Rigid Pavement

UNTCST (4)	DISS	DCON	DINT	
F10.0	F10.0	F10.0	F10.0	
1 10	20	30	40	

UNTCST(4) - Unit Cost of failure per lane-mile ($)

DISS - Number of failure at the time of survey

DCON - Date of survey condition (years)

DINT - Initial data of planning

KEYWORD: OLD SECTIONS

DIRECTIVE (one card)

	IPOT	IFF	OLDMNT	TPF	PFNO	RTINF
OLD SECTIONS	I5	I5	F10.0	F10.0	F10.0	F10.0
1 20	25	30	40	50	60	70

IPOT - POTTS Operation Switch
- =0: keep pavement older than Age to Terminal PSI (ATP) in POTTS
- =1: change percent of POTTS to some new target value at end of the analysis period
- =2: change POTTS size depending on projected overlay funding in dollars/yr for this representative section

IFF - Funding Operating Switch (used only if IPOT = 2)
- =0: funding under proposed limits is set to funding under present limits
- =1: read projected funding under proposed limits

OLDMNT - Maintenance Cost for These Sections in Dollars/Lane Mile/Yr (read for all values of IPOT)

TPF - Target Fraction of POTTS in Percent of Total Lane Miles (read for IPOT = 1)

PFNO - Percent of Total Lane Miles Not Expected to be Overlaid in the Analysis Period (read for IPOT = 1 or 2)

RTINF - Percent Inflation for Project Overlay Funding (read for IPOT = 2)

PROJECT FUNDS (up to six cards; read only if IPOT = 2)

APOF (20, 2)

F10.0	F10.0	F10.0	F10.0	F10.0	F10.0	F10.0	F10.0
1 – 10	20	30	40	50	60	70	80

APOF - Annual Projected Overlay Funds (dollars/year)

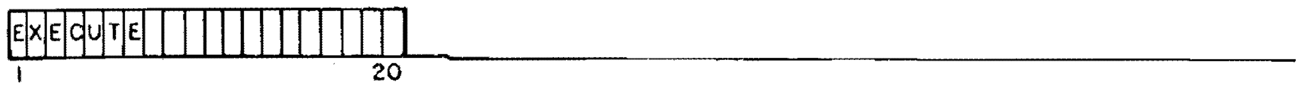
IFF = 0: read projected overlay funds under present regulations per each year of the analysis period

IFF = 1: read projected overlay funds under present regulations followed by projected overlay funds under proposed regulations for each year of the analysis period

Begin each array with year 1 of analysis period and specify for successively higher years

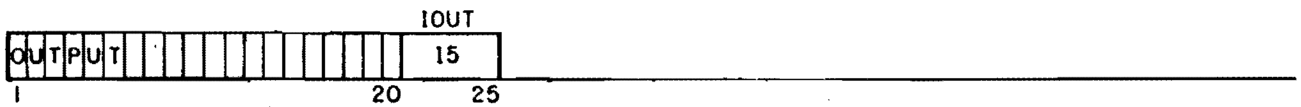
KEYWORD: EXECUTE (this card must be the last card of each problem set; see -STOP- directive)

DIRECTIVE (one card)



KEYWORD: OUTPUT

DIRECTIVE (one card)



IOUT - Output Form Switch
(refer to Table 8 for the various output values)

Table 8. Output options.

OPTION	DESCRIPTION
Option 0*:	Provides maintenance and rehabilitation cost differences and cost ratios between proposed and present legal limits. The data are provided for all representative sections and summarized by system. These costs are presented in three forms: unadjusted, present worth, and uniform annual cost.
Option 1 :	All the default information is supplied plus performance tables, POTTS tables, and summary cost tables.
Option 2 :	All of information of Option 1 is supplied plus summary payload and 18-kip (80-kN) ESAL information.
Option 3 :	All information of Option 2 is supplied plus a listing of the shifted weight distributions resulting from application of the NCHRP 141 shifting procedure.

KEYWORD: STOP (this directive is always the last data card)

DIRECTIVE (one card)

S	T	O	P																
1																			20

APPENDIX B

LISTING OF PROGRAM RENU

```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

                C
                C
                C                     R  E  N  U
                C
                C
                C      PROGRAM TO DETERMINE EFFECT OF LEGAL LOAD LIMITS ON LONG-RANGE
                C      PAVEMENT COSTS.
                C
                C      THIS VERSION CREATED AUG 7-1981
                C
                C
   ISN 0002            COMMON /MECH/XKT,NRU,NLH,ND,NDEL
   ISN 0003            COMMON /COSTS/ COSM(20,2), COSV(20,2), COSMS(20,2), COSVS(20,2),
                      1         CSMPW(2), CSVPW(2), CSMUA(2), CSVUA(2)
   ISN 0004            COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
   ISN 0005            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0006            COMMON /FUNDS/ APOF(20,2), RTINT, RTINF
   ISN 0007            COMMON /IO/ LI, LO, LD
   ISN 0008            COMMON /LABELS/ MATLAB(5,10)
   ISN 0009            COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),
                      1        TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
   ISN 0010            COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
   ISN 0011            COMMON /OUT/ PSIE(30,2), EALREM(30,2), COSTM(20,30,2),CSTOV(30,2)
                      1        ,PSIB(30)
   ISN 0012            COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
   ISN 0013            COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
   ISN 0014            COMMON / POV/ SNOVP(20,2), THOVP(20,2), CSTOVP(20,2), PP(20,2)
                      1         , RLP(20,2)
   ISN 0015            COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0016            COMMON /STRCOE/ STRCD(8),CC(4),MC(11),NC,STRC(5),RFS(4),RFB(4)
   ISN 0017            COMMON /TEMPC/ CONTP(25),DISTCT
   ISN 0018            COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0019            COMMON /SUMARY/ SECTLE(2,10,8),SYSTLE(60,8),NSECT(8),DELC(10,8),
                      1          COSR(10,8),DELCPW(10,8),COSRPW(10,8),DELCUA(10,8),
                      2          COSRUA(10,8),RLRAT(10,8),TLM(10,8),DSLV(10,8),NSYS
   ISN 0020            COMMON /CMP/ COMP(30,34), PCOMP(30), AATP(30)
   ISN 0021            COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                      1         U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                      2         PB,VPB,RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
   ISN 0022            COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0023            COMMON /TITLE/ TITLE(20,3), SECTTL(20)
   ISN 0024            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0025            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0026            CALL INIT(1)
   ISN 0027        100 CALL INPUT (IGO)
   ISN 0028            GO TO (110, 200, 300,300), IGO
   ISN 0029        110 CALL INIT(2)
   ISN 0030            CALL POTSET
   ISN 0031            CALL MNTSET
   ISN 0032            CALL INPRNT
   ISN 0033            CALL EALGET
   ISN 0034            CALL OUTPUT (2)
```

```
LEVEL 2.3.0 (JUNE 78)           MAIN          OS/360  FORTRAN H EXTENDED            DATE 82.147/20.12.14        PAGE    2
   ISN 0035            CALL LIFCYC
   ISN 0036            CALL OUTPUT(1)
   ISN 0037            IF (ISLV .GT. 0) CALL SALVAG
   ISN 0039            CALL FINANC (IERR)
   ISN 0040            CALL OUTPUT (4)
   ISN 0041            IF (IERR .GT. 0) GO TO 300
   ISN 0043            GO TO 100
   ISN 0044        200 CONTINUE
   ISN 0045            GO TO 100
   ISN 0046        300 CALL OUTPUT(0)
   ISN 0047            STOP
   ISN 0048            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       47, PROGRAM SIZE =       696, SUBPROGRAM NAME =  MAIN

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          128K BYTES OF CORE NOT USED
```

```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002            SUBROUTINE NPAGE
                C
                C     THIS ROUTINE EJECTS THE CURRENT PRINTER PAGE AND PRINTS THE
                C     HEADING AND PAGE NUMBER
                C
  ISN 0003            COMMON /IO/ LI, LO, LD
  ISN 0004            DATA NPG /0/
  ISN 0005            NPG = NPG + 1
  ISN 0006            WRITE (LO,20) NPG
  ISN 0007         20 FORMAT(1H1/1X,30HTEXAS TRANSPORTATION INSTITUTE,90X,
                    1         5HPAGE , I3 //
                    2    1X,48HRENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE /
                    3       1X,27HVERSION 1.1 - AUGUST  1981 //)
  ISN 0008            RETURN
  ISN 0009            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =        8, PROGRAM SIZE =      372, SUBPROGRAM NAME = NPAGE

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                         132K BYTES OF CORE NOT USED
```

```
LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED              DATE 82.147/20.12.27          PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002          BLOCK DATA
  ISN 0003          COMMON /TEMPC/ CONTP(25),DISTCT
  ISN 0004          COMMON /MECH/XKT,NRU,NLH,ND,NDEL
  ISN 0005          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                   *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
  ISN 0006          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
  ISN 0007          COMMON /CNSTS/ NAPOV, PAPOV, SIZE, AVRG
  ISN 0008          COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
  ISN 0009          COMMON /FUNDS/ APOF(20,2), RTINT, RTINF
  ISN 0010          COMMON /IO/ LI, LO, LD
  ISN 0011          COMMON /LABELS/ MATLAB(5,10)
  ISN 0012          COMMON /LMP/ XLM(30), YLM(30), POTLM(20,2), OUTP(20,2),
                   1             TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
  ISN 0013          COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
  ISN 0014          COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
  ISN 0015          COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
  ISN 0016          COMMON /STEER/ EQFACT(15,5), PTST(4)
  ISN 0017          COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
  ISN 0018          COMMON /STRCOE/ STRCD(8),CC(4),MC(11),NC,STRC(5),RFS(4),RFB(4)
  ISN 0019          COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
  ISN 0020          COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                   1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                   2              PB,VPB,RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
               C
               C ****************************************************************
               C VARIBLES COMPARISON BETWEEN AASHO & TEXAS EQUATIONS
               C
               C        TEXAS             AASHO         DESCRIPTIONS
               C      ---------         ---------      ------------------------------
               C        C(1)              ALF           HARMONIC MEAN TEMPERATURE
               C        C(2)              TI            THORN THWAITE INDEX
               C        C(3)              FTC           ANNUAL AVERAGE FREEZE-THAW CYCLES
               C        C(4)              WFTC
               C        C(5)              PR            ANNUAL AVERAGE RAINFALL
               C        C(6)              TM            MEAN MONTHLY TEMPERATURE
               C        DF(1)             DMD           MAXIMUM DEFLEXION
               C        DF(2)             SCI           SURFACE CURVATURE INDEX
               C        DT(1)             AS            ASPHALT STIFFNESS
               C        S(1)              TTC           TEXAS TRIAXIAL CLASS
               C        S(2)              SLL           LIQUID LIMIT
               C        S(3)              SPI           PLASTICITY INDEX
               C        S(4)              SPP           PERCENT PASSING #200
               C        T(1)              T             AGE IN YEARS
               C        TR(1)             ADT           AVERAGE DAILY TRAFFIC
               C        TR(2)             18-KIP        18-KIPS SINGLE AXLE LOADS
               C        TR(NPT)           W             18-KIPS SINGLE AXLE LOADS
               C      ---------          -------       ------------------------------
               C
               C *** REFER TO SUBROUTINES PSIT & RUTA
               C
               C ***********************************************************************
               C
  ISN 0021          DATA NAPOV, PAPOV, SIZE, AVRG /21, 5.0, 2.0, 100./
```

```
      ISN 0022          DATA XHCIO/0.0/,XHCIM/0.0/
      ISN 0023          DATA PICON, PTERM, PIOV, PTOV / 4*-1. /
      ISN 0024          DATA IF, IR, IC /1, 2, 3 /
      ISN 0025          DATA LI, LO, LD /5, 6, 1/
      ISN 0026          DATA SS, R, AGG, XK, E /3., 1., 195.43, 150., 4.0E6/
      ISN 0027          DATA NYAP, OVLIF, ATP, NYR / 20, 20., 20., 40 /
      ISN 0028          DATA RTINT, RTINF /0., 0. /
                  C     TABLE OF STEERING AXLE EQUIVALENCIES BY AXLE LOAD AND TERMINAL PSI
      ISN 0029          DATA XMNW18/10*0.0/
      ISN 0030          DATA SCT/.5,.5,.5,.5,.5/
      ISN 0031          DATA A/13.,13.,10.,8.,10.,10.,10.,10.,10.,0./
      ISN 0032          DATA AC/.5,.5,.5,.5,.5/
      ISN 0033          DATA B/12.,12.,10.,7.,10.,10.,10.,10.,40.,0./
      ISN 0034          DATA C/9.,-30.,125.,20.,16.,55.,0.,0.,0.,0./
      ISN 0035          DATA DT/.5,0.,0.,0.,0.,0.,0.,0.,0.,0./
      ISN 0036          DATA DF/1.5,1.,2.225,0.,0.,0.,0.,0.,0.,0./
      ISN 0037          DATA T/15.,0.,0.,0.,0.,0.,0.,0.,0.,0./
      ISN 0038          DATA TR/36000.,36000.,36000.,36000.,36000./
      ISN 0039          DATA S/5.,50.,30.,40.,0.,0.,0.,0.,0.,0./
      ISN 0040          DATA PI/4.7,4.73,4.41,4.81,4.6/
      ISN 0041          DATA PT/2.5,2.5,2.5,2.5,2.5/
      ISN 0042          DATA NAPOV, PAPOV, SIZE, AVRG /21, 5.0, 2.0, 100./
      ISN 0043          DATA PICON, PTERM, PIOV, PTOV / 4*-1. /
      ISN 0044          DATA IF, IR, IC /1, 2, 3 /
      ISN 0045          DATA NYAP, OVLIF, ATP, NYR / 20, 20., 20., 40 /
      ISN 0046          DATA PPF,TPF,PFNO /0., 0., 0. /
      ISN 0047          DATA RTINT, RTINF /0., 0. /
      ISN 0048          DATA PTST /1.5, 2.0, 2.5, 3.0/
      ISN 0049          DATA EQFACT /2., 4., 6., 8., 10., 12., 14., 16., 18., 20., 22.,
                       1            24., 26., 28., 30.,
                       2            .0005, .008, .04, .13, .28, .52, .92, 1.42, 2.12,
                       3            2.95, 4.02, 5.29, 6.73, 8.31, 10.19,
                       4            .0009, .01, .05, .14, .31, .54, .86, 1.31, 1.94,
                       5            2.52, 3.35, 4.4, 5.49, 6.67, 8.05,
                       6            .002, .02, .06, .18, .36, .62, .93, 1.33, 1.9, 2.44,
                       7            3.15, 3.95, 4.82, 5.83, 6.8,
                       8            .004, .03, .09, .23, .41, .66, .94, 1.28, 1.74,
                       9            2.16, 2.7, 3.28, 3.89, 4.59, 5.23/
      ISN 0050          DATA STRCD /.44, .34, .23, .14, .30, .18, .11, .14 /
      ISN 0051          DATA RFS /.9, .7, .5, .5/
      ISN 0052          DATA RFB /1., .9, .7, .5/
      ISN 0053          DATA CC / 1.0, 0.85, 0.75, 0.75 /
      ISN 0054          DATA NC /11/
      ISN 0055          DATA MC /3HACP,3HATB,3HCTB,3HAGB,3HSAB,3HLTB,3HAGS,3HLTS,
                       1        3HJCP, 3HCRC, 3HACO /
      ISN 0056          DATA MATLAB / 4HASPH, 4HALT , 4HSURF, 4HACE , 4H    ,
                       1              4HASPH, 4HALT , 4HBASE, 4H    , 4H    ,
                       2              4HCEME, 4HNT T, 4HREAT, 4HED B, 4HASE ,
                       3              4HAGGR, 4HEGAT, 4HE BA, 4HSE  , 4H    ,
                       4              4HSAND, 4H ASP, 4HHALT, 4H BAS, 4HE   ,
                       5              4HLIME, 4H TRE, 4HATED, 4H BAS, 4HE   ,
                       6              4HAGGR, 4HEGAT, 4HE SU, 4HBBAS, 4HE   ,
                       7              4HLIME, 4H TRE, 4HATED, 4H SUB, 4HBASE,
                       8              4HJCP , 4HSURF, 4HACE , 4H    , 4H    ,
                       9              4HCRC , 4HSURF, 4HACE , 4H    , 4H
                       A              /
      ISN 0057          DATA FLRPTP /1.2, 1.4, 1.6, 1.8 /
      ISN 0058          DATA CONTP / 21.,22.,22.,9.,16.,23.,26.,26.,28.,24.,28.,33.,33.,
```

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                   1            31.,31.,36.,30.,26.,25.,32.,38.,31.,25.,24.,19./
  ISN 0059              END


*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      58, PROGRAM SIZE =        0, SUBPROGRAM NAME = TEMPC

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          120K BYTES OF CORE NOT USED
```

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

```
ISN 0002          SUBROUTINE INPUT (IGO)
ISN 0003          COMMON /TEMPC/ CONTP(25),DISTCT
ISN 0004          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
ISN 0005          COMMON /MNTPAR/ UNTCST(4),USRMDL(31,3),WDTH,S,DISS,DCON,DIN,MFLG
ISN 0006          COMMON /MECH/XKT,NRU,NLH,ND,NDEL
ISN 0007          COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
ISN 0008          COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
ISN 0009          COMMON /FUNDS/ APOF(20,2), RTINT, RTINF
ISN 0010          COMMON /INTVLS/ STARTS(6)
ISN 0011          COMMON /IO/ LI, LO, LD
ISN 0012          COMMON /LABELS/ MATLAB(5,10)
ISN 0013          COMMON /LDS/ PGVWL, PSAL, PTAL, PTRAL, FGVWL, FSAL, FTAL, FTRAL,
                 1             PSTAW(10), FSTAW(10)
ISN 0014          COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),TOTALM, PPF,
                 1            TPF, PFNO, NASL, NSLR, TOVLM(30,2)
ISN 0015          COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
ISN 0016          COMMON /NEWSYS/ NEWSYS
ISN 0017          COMMON /NMBR/ SA(30,11), TA(30,11), TR(50,11), VE(30,11),
                 1              VG(75,11), NLDI(6), EPI(10), ST(30,11)
ISN 0018          COMMON /OUTSWH/ IOUT
ISN 0019          COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
ISN 0020          COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
ISN 0021          COMMON /STRCOE/ STRCD(8),CC(4),MC(11),NC,STRC(5),RFS(4),RFB(4)
ISN 0022          COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
ISN 0023          COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
ISN 0024          COMMON /TITLE/ TITLE(20,3), SECTTL(20)
ISN 0025          COMMON /TRTYP/ TTYP(2,10), PTTYP(10,20,2), PCTTR(20,2),PERCT(4),
                 1               NAXLES(10,4),NT(4), NTTY, NATT, NTT, NEWTRK
ISN 0026          COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                 1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                 2              PB,VPB,RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
ISN 0027          COMMON /SWTCHS/ OVLIFE, PCTINT, PCTINF, TPFPC, PFNOPC, AGR, SPCUT,
                 1                XMLI, CACI, CGRI, ICAC, ACDENS, ICGR, GRDENS,
                 2                INTT, SAVMNT, IDST, NLD, MCODE(5)
ISN 0028          DIMENSION KWORD(5), IVAL(2), VAL(5), KEY(22), STRCIN(5)
ISN 0029          DATA ISTOP /4HSTOP/
ISN 0030          DATA SATP /0./
ISN 0031          DATA KEY /4HSTOP, 4HEXEC, 4HFLEX, 4HRIGI, 4HPERF, 4HAGE , 4HOVER,
                 1          4HMODE, 4HHIST, 4HNO M, 4HTRUC, 4HSYST, 4HOLD , 4HRUN ,
                 2          4HLOAD, 4HSING, 4HTAND, 4HTRID, 4HGVW , 4HEMPT, 4HSTEE,
                 3          4HOUTP/
ISN 0032          DATA IACO /4HACO /
ISN 0033          DATA NKEY /22/
ISN 0034          IDST = 0
ISN 0035          NEWTRK = 0
ISN 0036          NEWSYS = 0
ISN 0037          ATP = SATP
ISN 0038          CALL NPAGE
            C
            C     READ AND ECHO PRINT A KEYWORD CARD
            C
ISN 0039        2 READ (LI,3) KWORD, IVAL, VAL
ISN 0040        3 FORMAT(5A4,2I5,5F10.0)
```

```
ISN 0041          WRITE (LO,4) KWORD, IVAL, VAL
ISN 0042        4 FORMAT(1X,5A4,2I5,5(F10.2,2X))
             C
             C    TEST FOR NORMAL PROGRAM TERMINATION
             C
ISN 0043          IF (KWORD(1) .EQ. ISTOP) GO TO 9992
             C
             C    SEARCH THE KEY TABLE FOR THE KEYWORD READ IN
             C
ISN 0045          DO 10 I=1,NKEY
ISN 0046          IKEY = I
ISN 0047          IF (KWORD(1) .EQ. KEY(I)) GO TO 15
ISN 0049       10 CONTINUE
ISN 0050          GO TO 9996
ISN 0051       15 GO TO (9998, 9997, 100, 200, 300, 400, 500, 600, 700, 800, 900,
                1        1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900,
                2        2000) , IKEY
             C
             C    *** FLEXIBLE SECTION ***
             C
ISN 0052      100 IP = IF
ISN 0053          WLANE = VAL(1)
ISN 0054          WDTH = WLANE
ISN 0055          SS = VAL(2)
ISN 0056          R = VAL(3)
ISN 0057          PF=VAL(4)
ISN 0058          PFO=VAL(5)
             C
             C    READ A TITLE CARD FOR THIS SECTION
             C
ISN 0059      101 READ (LI,102) SECTTL
ISN 0060      102 FORMAT (20A4)
ISN 0061          WRITE (LO,103) SECTTL
ISN 0062      103 FORMAT (1X,20A4)
ISN 0063          IF(IP.EQ.IR) GO TO 105
             C
             C    READ AND ECHO PRINT THE MATERIALS CARD
ISN 0065          READ(LI,19) NDIST,NIS,NPT,NRU,NLH,NDEL,TPE,MNOVTK,MXOVTK
ISN 0066          DISTCT=FLOAT(NDIST)
ISN 0067          ND=1
ISN 0068          IF(NDIST.GT.1.AND.NDIST.LE.9) ND=2
ISN 0070          IF(NDIST.GE.22.AND.NDIST.LE.25) ND=2
ISN 0072     19   FORMAT(9I5)
ISN 0073          WRITE(LO,21) NDIST,NIS,NPT,NRU,NLH,NDEL,TPE,MNOVTK,MXOVTK
ISN 0074     21   FORMAT(1X,9I5)
ISN 0075     105  READ (LI,110) (MCODE(I), THICK(I), STRCIN(I), I=1,4)
ISN 0076          IF(IP.EQ.IR) GO TO 1010
ISN 0078          MCODE(1)=MC(1)
ISN 0079          MCODE(2)=MC(4)
ISN 0080          MCODE(3)=MC(8)
             C
             C
             C    THICK REPRESENTS THE LAYER THICKNESSES OF REPRESENTATIVE
             C    SECTIONS
             C
             C
ISN 0081          IF(THICK(1).NE.0) GO TO 1010
ISN 0083          IF(NPT.NE.3.OR.NRU.NE.1) GO TO 50
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ISN 0085           THICK(1)=.75
ISN 0086           THICK(2)=6.0
ISN 0087           GO TO 1010
ISN 0088      50   IF(NPT.NE.3.OR.NRU.NE.2) GO TO 51
ISN 0090           THICK(1)=0.75
ISN 0091           THICK(2)=8.0
ISN 0092           GO TO 1010
ISN 0093        51 IF(NPT.NE.1.OR.NRU.NE.1.OR.NLH.NE.1) GO TO 52
ISN 0095           THICK(1)=2.0
ISN 0096           THICK(2)=8.0
ISN 0097           GO TO 1010
ISN 0098      52   IF(NPT.NE.1.OR.NRU.NE.1.OR.NLH.NE.2) GO TO 53
ISN 0100           THICK(1)=4.0
ISN 0101           THICK(2)=12.0
ISN 0102           GO TO 1010
ISN 0103      53   IF(NPT.NE.1.OR.NRU.NE.2.OR.NLH.NE.1) GO TO 54
ISN 0105           THICK(1)=2.0
ISN 0106           THICK(2)=8.
ISN 0107           THICK(3)=6.0
ISN 0108           GO TO 1010
ISN 0109      54   IF(NPT.NE.1.OR.NRU.NE.2.OR.NLH.NE.2) GO TO 55
ISN 0111           THICK(1)=4.0
ISN 0112           THICK(2)=10.0
ISN 0113           THICK(3)=6.0
ISN 0114           GO TO 1010
ISN 0115      55   MCODE(2)=MC(2)
ISN 0116           MCODE(3)=MC(4)
ISN 0117           MCODE(4)=MC(8)
ISN 0118           IF(NPT.NE.4.OR.NRU.NE.1.OR.NLH.NE.1) GO TO 56
ISN 0120           THICK(1)=2.0
ISN 0121           THICK(2)= 2.0
ISN 0122           THICK(3)=8.0
ISN 0123           GO TO 1010
ISN 0124      56   IF(NPT.NE.4.OR.NRU.NE.1.OR.NLH.NE.2) GO TO 57
ISN 0126           THICK(1)=3.0
ISN 0127           THICK(2)= 4.0
ISN 0128           THICK(3)=12.0
ISN 0129           GO TO 1010
ISN 0130      57   IF(NPT.NE.4.OR.NRU.NE.2.OR.NLH.NE.1) GO TO 58
ISN 0132           THICK(1)=2.0
ISN 0133           THICK(2)= 2.0
ISN 0134           THICK(3)=8.0
ISN 0135           THICK(4)=6.0
ISN 0136      58   IF(NPT.NE.4.OR.NRU.NE.2.OR.NLH.NE.2) GO TO 1010
ISN 0138           THICK(1)=3.0
ISN 0139           THICK(2)= 4.0
ISN 0140           THICK(3)=10.0
ISN 0141           THICK(4)=6.0
ISN 0142      1010 CONTINUE
ISN 0143       110 FORMAT(5(A3,2X,2F5.0,1X))
ISN 0144           WRITE (LO,120) (MCODE(I), THICK(I), STRCIN(I), I=1,4)
ISN 0145       120 FORMAT(1X,5(A3,2X,F5.1,F5.3,1X))
              C
              C    DETERMINE THE NUMBER OF LAYERS IN THE PAVEMENT STRUCTURE
              C
ISN 0146           IPFLG = 0
ISN 0147           DO 140 I=1,4
ISN 0148           IF (THICK(I) .LE. 0.0) GO TO 160
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  ISN 0150            NLAY = I
  ISN 0151            STRC(I) = STRCIN(I)
  ISN 0152            DO 135 J=1,NC
  ISN 0153            IF (MCODE(I) .NE. MC(J)) GO TO 135
  ISN 0155            IF ((IP .EQ. IF) .AND. ((J .EQ. 9) .OR. (J .EQ. 10))) GO TO 9994
  ISN 0157            IF ((IP .EQ. IR) .AND. (J .EQ. 1)) IPFLG = I
  ISN 0159            MTYPE(I) = J
  ISN 0160            GO TO 140
  ISN 0161        135 CONTINUE
  ISN 0162            GO TO 9993
  ISN 0163        140 CONTINUE
  ISN 0164        160 IF (IPFLG .EQ. 0) GO TO 165
  ISN 0166            IF (MTYPE(2) .NE. 9 .AND. MTYPE(2) .NE. 10) GO TO 9989
  ISN 0168            NIS=1
  ISN 0169            IP = IC
  ISN 0170        165 STRC(5) = STRC(1)
  ISN 0171            MCODE(5) = IACO
  ISN 0172            GO TO 2
                C
                C     *** RIGID SECTION ***
                C
  ISN 0173        200 IP = IR
  ISN 0174            WLANE = VAL(1)
  ISN 0175            WDTH = WLANE
  ISN 0176             XK=VAL(2)
  ISN 0177            IF (VAL(3) .NE. 0.0) AGG = VAL(3)
  ISN 0179            IF (VAL(4) .NE. 0.0) E = VAL(4)
  ISN 0181            IF (VAL(5) .NE. 0.0) DISTCT = VAL(5)
  ISN 0183            IF (VAL(4) .NE. 0.0) E = VAL(4)
  ISN 0185            GO TO 101
                C
                C     *** PERFORMANCE SECTION ***
                C
  ISN 0186        300 PICON = VAL(1)
  ISN 0187            PTERM = VAL(2)
  ISN 0188            PIOV = VAL(3)
  ISN 0189            PTOV = PTERM
  ISN 0190            OVLIFE = VAL(4)
  ISN 0191            OVLIF = NYAP
  ISN 0192            IF (VAL(4) .GT. 0.) OVLIF = VAL(4)
  ISN 0194            READ (LI,310) ATP
  ISN 0195        310 FORMAT(3F10.0)
  ISN 0196            WRITE (LO,320) ATP
  ISN 0197            IF(ATP.LT.1) ATP=13.
  ISN 0199        320 FORMAT(1X,8F10.2)
  ISN 0200            SATP = ATP
  ISN 0201            GO TO 2
                C
                C     *** AGE DISTRIBUTION SECTION ***
                C
  ISN 0202        400 NASL = IVAL(1)
  ISN 0203            ISLV = IVAL(2)
  ISN 0204            FLRP = VAL(1)
                C
                C     READ AND ECHO PRINT THE DISTRIBUTION OF LANE MILES BY AGE
                C
  ISN 0205            READ (LI,410) (YLM(I),I=1,NASL)
  ISN 0206        410 FORMAT(16F5.0,/,14F5.0)
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ISN 0207             WRITE (LO,420) (YLM(I),I=1,NASL)
ISN 0208         420 FORMAT(1X,15F8.1/1X,15F8.1)
ISN 0209             IF (ISLV .EQ. 0) GO TO 404
ISN 0211             READ (LI,430) (VI(I),I=1,NASL)
ISN 0212             WRITE (LO,320) (VI(I),I=1,NASL)
ISN 0213         430 FORMAT(16F5.0)
ISN 0214             READ (LI,430) (RI(I),I=1,NASL)
ISN 0215             WRITE (LO,320) (RI(I),I=1,NASL)
ISN 0216       404   IF(NASL.LE.25) GO TO 421
ISN 0218             DO 422 I=26,NASL
ISN 0219         422 YLM(25)=YLM(25)+YLM(I)
ISN 0220             NASL=25
ISN 0221         421 CONTINUE
ISN 0222             GO TO 2
               C
               C     *** OVERLAY SECTION ***
               C
ISN 0223         500 ICAC = IVAL(1)
ISN 0224             ICGR = IVAL(2)
               C
               C     READ AND ECHO PRINT THE OVERLAY PARAMETERS
               C
ISN 0225             READ (LI,510) PPVDSH, WPSH, WGSH, CACI, CGRI, ACDENS, GRDENS
ISN 0226         510 FORMAT(7F10.0)
ISN 0227             WRITE (LO,520) PPVDSH, WPSH, WGSH, CACI, CGRI, ACDENS, GRDENS
ISN 0228         520 FORMAT (1X,7F10.2)
ISN 0229             GO TO 2
               C
               C     *** MODEL MAINTENANCE SECTION ***
               C
ISN 0230         600 IARMS = IVAL(1)
ISN 0231             MFLG = 1
               C
               C     READ AND ECHO PRINT THE UNIT COSTS FOR BOTH FLEXIBLE AND RIGID
               C     PAVEMENTS, AND THE JOINT SEALING PARAMETERS
               C
ISN 0232             READ (LI,610) (UNTCST(I),I=1,3)
ISN 0233         610 FORMAT(3F10.0)
ISN 0234             READ (LI,620) UNTCST(4),DISS,DCON,DIN
ISN 0235             WRITE (LO,630) (UNTCST(I),I=1,4), DISS, DCON, DIN
ISN 0236         620 FORMAT(4F10.0,2F5.0,I5)
ISN 0237         630 FORMAT(1X,3F10.2/1X,6F10.2,I5)
ISN 0238             GO TO 2
               C
               C     *** HISTORICAL MAINTENANCE SECTION ***
               C
ISN 0239         700 IARMS = IVAL(1)
ISN 0240             MFLG = 2
               C
               C     READ AND ECHO PRINT THE MAINTENANCE COSTS PER LANE MILE BY AGE FOR
               C     FLEXIBLE PAVEMENTS
               C
ISN 0241             READ (LI,710) (USRMDL(I,1),I=1,24)
ISN 0242         710 FORMAT(8F10.0)
ISN 0243             WRITE (LO,720) (USRMDL(I,1),I=1,24)
ISN 0244         720 FORMAT(1X,8F10.0)
               C
               C     READ AND ECHO PRINT THE MAINTENANCE COSTS PER LANE MILE BY AGE FOR
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```
              C       RIGID PAVEMENTS
              C
  ISN 0245            READ (LI,710) (USRMDL(I,2),I=1,24)
  ISN 0246            WRITE (LO,720) (USRMDL(I,2),I=1,24)
  ISN 0247            GO TO 2
              C
              C       *** NO MAINTENANCE SECTION ***
              C
  ISN 0248        800 MFLG = 0
  ISN 0249            GO TO 2
              C
              C       *** TRUCK TYPES SECTION ***
              C
  ISN 0250        900 NTTY = IVAL(1)
  ISN 0251            NATT = IVAL(2)
  ISN 0252            PERCT(1)=VAL(1)
  ISN 0253            PERCT(2)=VAL(2)
  ISN 0254            PERCT(3)=VAL(3)
  ISN 0255            PERCT(4)=VAL(4)
  ISN 0256            NEWTRK = NEWTRK + 1
  ISN 0257            IF ((NTTY+NATT) .GT. 10) GO TO 9995
  ISN 0259            NTT = NTTY
  ISN 0260            K = 0
  ISN 0261            INTT = NTT + NATT
              C
              C       READ AND ECHO PRINT THE TRUCK LABELS
              C
  ISN 0262            READ (LI,910) ((TTYP(M,J),M=1,2),J=1,INTT)
  ISN 0263        910 FORMAT(8(2A4,2X))
  ISN 0264            WRITE (LO,920) ((TTYP(M,J),M=1,2),J=1,INTT)
  ISN 0265        920 FORMAT(1X,8(2A4,2X))
              C
              C       READ AND ECHO PRINT THE AXLE CONFIGURATIONS
              C
  ISN 0266            READ (LI,921) ((NAXLES(M,J),J=1,4),M=1,INTT)
  ISN 0267        921 FORMAT(8(4I2,2X))
  ISN 0268            WRITE (LO,922) ((NAXLES(M,J),J=1,4),M=1,INTT)
  ISN 0269        922 FORMAT(1X,8(4I2,2X))
  ISN 0270            DO 929 J=1,4
  ISN 0271            NT(J) = 0
  ISN 0272            DO 928 M=1,NTT
  ISN 0273            NT(J) = NT(J) + NAXLES(M,J)
  ISN 0274        928 CONTINUE
  ISN 0275        929 CONTINUE
              C
              C       READ AND ECHO PRINT THE TRUCK PERCENTAGES
              C
  ISN 0276        935 K = K+1
  ISN 0277            DO 950 N=1,NYAP
  ISN 0278            READ (LI,930) I, (PTTYP(J,I,K),J=1,10), PCTTR(I,K)
  ISN 0279        930 FORMAT(I3,1X,11F6.0)
  ISN 0280            WRITE (LO,940) I, (PTTYP(J,I,K),J=1,10), PCTTR(I,K)
  ISN 0281        940 FORMAT(1X,I3,1X,11F6.2)
  ISN 0282        950 CONTINUE
  ISN 0283            IF ((NATT .GT. 0) .AND. (K .EQ. 1)) GO TO 935
  ISN 0285            IF (K .EQ. 2) GO TO 2
  ISN 0287            DO 970 J=1,10
  ISN 0288            DO 960 I=1,20
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ISN 0289          PTTYP(J,I,2) = PTTYP(J,I,1)
ISN 0290      960 CONTINUE
ISN 0291      970 CONTINUE
ISN 0292          GO TO 2
            C
            C     *** TITLE CARD SECTION ***
            C
            C     READ AND ECHO PRINT THE THREE TITLE CARDS
            C
ISN 0293     1000 DO 1030 J=1,3
ISN 0294          READ (LI,102) (TITLE(I,J),I=1,20)
ISN 0295          WRITE (LO,103) (TITLE(I,J),I=1,20)
ISN 0296     1030 CONTINUE
ISN 0297          NEWSYS = 1
ISN 0298          GO TO 2
            C
            C     *** OLD SECTIONS ***
            C
ISN 0299     1100 SAVMNT = VAL(1)
ISN 0300          IPOT = IVAL(1)
ISN 0301          IFF = IVAL(2)
ISN 0302          IF (IPOT .EQ. 0) GO TO 2
ISN 0304          IF (IPOT .EQ. 1) GO TO 1150
ISN 0306          PFNOPC = VAL(3)
ISN 0307          PCTINF = VAL(4)
            C
            C     READ AND ECHO PRINT THE ANNUAL PROJECTED OVERLAY FUNDS FOR PRESENT
            C     REGULATIONS
            C
ISN 0308          READ (LI,1110) (APOF(I,1),I=1,NYAP)
ISN 0309     1110 FORMAT(8F10.0)
ISN 0310          WRITE (LO,1120) (APOF(I,1),I=1,NYAP)
ISN 0311     1120 FORMAT(1X,8F10.0)
ISN 0312          IF (IFF .EQ. 1) GO TO 1140
ISN 0314          DO 1130 I=1,NYAP
ISN 0315          APOF(I,2) = APOF(I,1)
ISN 0316     1130 CONTINUE
ISN 0317          GO TO 2
            C
            C     READ AND ECHO PRINT THE ANNUAL PROJECTED OVERLAY FUNDS FOR FUTURE
            C     REGULATIONS
            C
ISN 0318     1140 READ (LI,1110) (APOF(I,2),I=1,NYAP)
ISN 0319          WRITE (LO,1120) (APOF(I,2),I=1,NYAP)
ISN 0320          GO TO 2
ISN 0321     1150 TPFPC = VAL(2)
ISN 0322          PFNOPC = VAL(3)
ISN 0323          GO TO 2
            C
            C     *** RUN PARAMETERS ***
            C
ISN 0324     1200 IF (IVAL(1) .NE. 0) NYAP = MIN0(IVAL(1),20)
ISN 0326          IEQTRP = IVAL(2)
ISN 0327          AGR = VAL(1)
ISN 0328          PCTINT = VAL(2)
ISN 0329          IF(VAL(3).NE.0.0)XHCIO=VAL(3)
ISN 0331          IF(VAL(4).NE.0.0)XHCIM=VAL(4)
ISN 0333          GO TO 2
```

```
                  C
                  C      *** LOAD LIMITS SECTION ***
                  C
                  C      READ THE PRESENT AND FUTURE LOAD LIMITS
                  C
ISN 0334           1300 IEWS = IVAL(1)
ISN 0335                IDST = 1
ISN 0336                NEWTRK = NEWTRK + 2
ISN 0337                READ (LI,1310) PGVWL, PSAL, PTAL, PTRAL
ISN 0338           1310 FORMAT(4F10.0)
ISN 0339                WRITE (LO,1315) PGVWL, PSAL, PTAL, PTRAL
ISN 0340           1315 FORMAT(1X,4F10.2)
ISN 0341                READ (LI,1310) FGVWL, FSAL, FTAL, FTRAL
ISN 0342                WRITE (LO,1315) FGVWL, FSAL, FTAL, FTRAL
                  C
                  C      READ THE PRESENT AND FUTURE STEERING AXLE WEIGHTS FOR EACH TRUCK TYPE
                  C
ISN 0343                NTT = INTT
ISN 0344                READ (LI,1320) (PSTAW(I),I=1,NTT)
ISN 0345                READ (LI,1320) (FSTAW(I),I=1,NTT)
ISN 0346           1320 FORMAT(10F8.0)
ISN 0347                WRITE (LO,1325) (PSTAW(I),I=1,NTT)
ISN 0348                WRITE (LO,1325) (FSTAW(I),I=1,NTT)
ISN 0349           1325 FORMAT(1X,10F8.0)
                  C
                  C      READ THE NEW EMPTY WEIGHT (AS A PERCENTAGE OF THE CURRENT EMPTY WEIGHT)
                  C      FOR EACH TRUCK TYPE
                  C
ISN 0350                IF (IEWS .EQ. 0) GO TO 2
ISN 0352                READ (LI,1320) (EPI(I),I=1,NTT)
ISN 0353                WRITE (LO,1330) (EPI(I),I=1,NTT)
ISN 0354           1330 FORMAT(1X,10F8.2)
ISN 0355                GO TO 2
                  C
                  C      *** SINGLE AXLE SECTION ***
                  C
ISN 0356           1400 NLDI(1) = IVAL(1)
ISN 0357                NLD = IVAL(1)
ISN 0358                NTT = INTT
ISN 0359                STARTS(1) = VAL(1)
ISN 0360                NEWTRK = NEWTRK + 2
                  C
                  C      READ THE LOAD INTERVALS AND, FOR EACH TRUCK TYPE, THE NUMBER OF
                  C      SINGLE AXLES FOR EACH INTERVAL
                  C
ISN 0361                DO 1420 L=1,NLD
ISN 0362                READ (LI,1410) ELDINT, (SA(L,J),J=1,NTT)
ISN 0363           1410 FORMAT(F10.0,10F7.0)
ISN 0364                WRITE (LO,1415) ELDINT, (SA(L,J),J=1,NTT)
ISN 0365           1415 FORMAT(1X,F10.0,10F7.0)
ISN 0366                SA(L,11) = ELDINT
ISN 0367           1420 CONTINUE
ISN 0368                DO 1422 K=1,NLD
ISN 0369                SA(K,2)=0.000001
ISN 0370                SA(K,3)=0.000001
ISN 0371           1422 CONTINUE
ISN 0372                GO TO 2
                  C
```

```
                  C       *** TANDEM AXLE SECTION ***
                  C
    ISN 0373       1500 NLDI(2) = IVAL(1)
    ISN 0374            NLD = IVAL(1)
    ISN 0375            NTT = INTT
    ISN 0376            STARTS(2) = VAL(1)
    ISN 0377            NEWTRK = NEWTRK + 2
                  C
                  C       READ THE LOAD INTERVALS AND NUMBER OF DOUBLES PER TRUCK TYPE PER INTERVAL
                  C
    ISN 0378            DO 1510 L=1,NLD
    ISN 0379            READ (LI,1410) ELDINT, (TA(L,J),J=1,NTT)
    ISN 0380            WRITE (LO,1415) ELDINT, (TA(L,J),J=1,NTT)
    ISN 0381            TA(L,11) = ELDINT
    ISN 0382       1510 CONTINUE
    ISN 0383            GO TO 2
                  C
                  C       *** TRIPLE AXLE SECTION ***
                  C
    ISN 0384       1600 NLDI(3) = IVAL(1)
    ISN 0385            NLD = IVAL(1)
    ISN 0386            NTT = INTT
    ISN 0387            STARTS(3) = VAL(1)
    ISN 0388            NEWTRK = NEWTRK + 2
                  C
                  C       READ THE LOAD INTERVALS AND NUMBER OF TRIPLES PER TRUCK TYPE PER INTERVAL
                  C
    ISN 0389            DO 1610 L=1,NLD
    ISN 0390            READ (LI,1410) ELDINT, (TR(L,J),J=1,NTT)
    ISN 0391            WRITE (LO,1415) ELDINT, (TR(L,J),J=1,NTT)
    ISN 0392            TR(L,11) = ELDINT
    ISN 0393       1610 CONTINUE
    ISN 0394            GO TO 2
                  C
                  C       *** GROSS VEHICLE WEIGHT SECTION ***
                  C
    ISN 0395       1700 NLDI(4) = IVAL(1)
    ISN 0396            NLD = IVAL(1)
    ISN 0397            NTT = INTT
    ISN 0398            STARTS(4) = VAL(1)
    ISN 0399            NEWTRK = NEWTRK + 2
                  C
                  C       READ THE LOAD INTERVALS AND THE NUMBER OF EACH TRUCK TYPE WHOSE GVW FALLS
                  C       WITHIN EACH INTERVAL
                  C
    ISN 0400            DO 1710 L=1,NLD
    ISN 0401            READ (LI,1410) ELDINT, (VG(L,J),J=1,NTT)
    ISN 0402            WRITE (LO,1415) ELDINT, (VG(L,J),J=1,NTT)
    ISN 0403            VG(L,11) = ELDINT
    ISN 0404       1710 CONTINUE
    ISN 0405            GO TO 2
                  C
                  C       *** EMPTY VEHICLE WEIGHT SECTION ***
                  C
    ISN 0406       1800 NLDI(5) = IVAL(1)
    ISN 0407            NLD = IVAL(1)
    ISN 0408            NTT = INTT
    ISN 0409            STARTS(5) = VAL(1)
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  ISN 0410            NEWTRK = NEWTRK + 2
                C
                C     READ THE LOAD INTERVALS AND THE NUMBER OF EACH TRUCK TYPE WHOSE EVW FALLS
                C     WITHIN EACH INTERVAL
                C
  ISN 0411            DO 1810 L=1,NLD
  ISN 0412            READ (LI,1410) ELDINT, (VE(L,J),J=1,NTT)
  ISN 0413            WRITE (LO,1415) ELDINT, (VE(L,J),J=1,NTT)
  ISN 0414            VE(L,11) = ELDINT
  ISN 0415       1810 CONTINUE
  ISN 0416            GO TO 2
                C
                C     *** STEERING AXLES SECTION ***
                C
  ISN 0417       1900 NLDI(6) = IVAL(1)
  ISN 0418            NLD = IVAL(1)
  ISN 0419            NTT = INTT
  ISN 0420            STARTS(6) = VAL(1)
  ISN 0421            IDST = 6
  ISN 0422            NEWTRK = NEWTRK + 2
                C
                C     READ THE LOAD INTERVALS AND, FOR EACH TRUCK TYPE, THE NUMBER OF
                C     STEERING AXLES FOR EACH INTERVAL
                C
  ISN 0423            DO 1910 L=1,NLD
  ISN 0424            READ (LI,1410) ELDINT, (ST(L,J),J=1,NTT)
  ISN 0425            WRITE (LO,1415) ELDINT, (ST(L,J),J=1,NTT)
  ISN 0426            ST(L,11) = ELDINT
  ISN 0427       1910 CONTINUE
  ISN 0428            GO TO 2
                C
                C     *** OUTPUT KEYWORD SECTION ***
                C
  ISN 0429       2000 IOUT = IVAL(1)
  ISN 0430            GO TO 2
                C
                C     *** KEYWORD ERROR PROCESSING SECTION ***
                C
  ISN 0431       9989 WRITE (LO,9089) IPFLG
  ISN 0432       9089 FORMAT(/1X,19H*** ERROR IN LAYER ,I1,4H ***/
                     1       38H ACP NOT PERMITTED FOR RIGID PAVEMENT /
                     2       30H UNLESS ABOVE JCP OR CRC LAYER//
                     3       15H RUN TERMINATED)
  ISN 0433            GO TO 9999
  ISN 0434       9992 IGO = 3
  ISN 0435            GO TO 99999
  ISN 0436       9993 WRITE (LO,9093)
  ISN 0437       9093 FORMAT(/1X,37H*** UNRECOGNIZABLE MATERIALS CODE ***//
                     1       15H RUN TERMINATED)
  ISN 0438            GO TO 9999
  ISN 0439       9994 WRITE (LO,9094)
  ISN 0440       9094 FORMAT(/1X,51H*** ILLEGAL MATERIAL CODE FOR THIS TYPE OF PAVEMENT,
                     1       4H ***//15H RUN TERMINATED)
  ISN 0441            GO TO 9999
  ISN 0442       9995 WRITE (LO,9095)
  ISN 0443       9095 FORMAT(/1X,28H*** TOO MANY TRUCK TYPES ***//
                     1       15H RUN TERMINATED)
  ISN 0444            GO TO 9999
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  ISN 0445       9996 WRITE (LO,9096)
  ISN 0446       9096 FORMAT(/1X,44H*** SPECIFIED KEYWORD NOT FOUND IN TABLE ***,
                    1        //15H RUN TERMINATED)
  ISN 0447            GO TO 9999
  ISN 0448       9997 IGO = 1
  ISN 0449            GO TO 99999
  ISN 0450       9998 WRITE (LO,9098)
  ISN 0451       9098 FORMAT(/1X,44H*** STOP DIRECTIVE FOUND OUT OF SEQUENCE ***,
                    1        //15H RUN TERMINATED)
  ISN 0452       9999 IGO = 4
  ISN 0453      99999 DO 3500 I=1,30
  ISN 0454            XLM(I) = YLM(I)
  ISN 0455       3500 CONTINUE
  ISN 0456            S = SPCUT
  ISN 0457            XML = 0.
  ISN 0458            IF (XMLI .NE. 0.) XML = XMLI
  ISN 0460            LP = MINO(4, MAXO(1,INT(7.1 - 2.*PTERM)))
  ISN 0461            IF (FLRP .LE. 0.) FLRP = FLRPTP(LP)
  ISN 0463            RETURN
  ISN 0464            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      463, PROGRAM SIZE =     10552, SUBPROGRAM NAME = INPUT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                         44K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

      ISN 0002          SUBROUTINE INPRNT
      ISN 0003          COMMON /TEMPC/ CONTP(25),DISTCT
      ISN 0004          COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
      ISN 0005          COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
      ISN 0006          COMMON /FUNDS/ APOF(20,2), RTINT, RTINF
      ISN 0007          COMMON /INTVLS/ STARTS(6)
      ISN 0008          COMMON /IO/ LI, LO, LD
      ISN 0009          COMMON /LABELS/ MATLAB(5,10)
      ISN 0010          COMMON /LDS/ PGVWL, PSAL, PTAL, PTRAL, FGVWL, FSAL, FTAL, FTRAL,
                       1             PSTAW(10), FSTAW(10)
      ISN 0011          COMMON /LMP/ XLM(30), YLM(30), POTLM(20,2), OUTP(20,2), TOTALM,
                       1             PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
      ISN 0012          COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
      ISN 0013          COMMON /MNTPAR/ UNTCST(4),USRMDL(31,3),WDTH,S,DISS,DCON,DIN,MFLG
      ISN 0014          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
      ISN 0015          COMMON /NEWSYS/ NEWSYS
      ISN 0016          COMMON /NMBR/ SA(30,11), TA(30,11), TR(50,11), VE(30,11),
                       1              VG(75,11), NLDI(6), EPI(10), ST(30,11)
      ISN 0017          COMMON /OUTSWH/ IOUT
      ISN 0018          COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
      ISN 0019          COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
      ISN 0020          COMMON /STRCOE/ STRCD(8), CC(4), MC(11), NC, STRC(5), RFS(4),
                       1                RFB(4)
      ISN 0021          COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
      ISN 0022          COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
      ISN 0023          COMMON /TITLE/ TITLE(20,3), SECTTL(20)
      ISN 0024          COMMON /TRTYP/ TTYP(2,10), PTTYP(10,20,2), PCTTR(20,2),PERCT(4),
                       1               NAXLES(10,4), NT(4), NTTY, NATT, NTT, NEWTRK
      ISN 0025          COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                       1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                       2              PB, VPB, RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
      ISN 0026          COMMON /SWTCHS/ OVLIFE, PCTINT, PCTINF, TPFPC, PFNOPC, AGR, SPCUT,
                       1                XMLI, CACI, CGRI, ICAC, ACDENS, ICGR, GRDENS,
                       2                INTT, SAVMNT, IDST, NLD, MCODE(5)
      ISN 0027          DIMENSION HEAD(5,6), TOTL(2), IPRFT(2,2), MEQTRP(4,2),
                       1          MDASH(4,2), IUNIT(9), MCRAM(2), NAMES(4,2)
      ISN 0028          DATA MAXLN, MCRAM, TOTL /10, 4HNO  , 4HYES , 4HTOTA, 4HL   /
      ISN 0029          DATA IPRFT /4HPRES, 4HENT , 4HPROP, 4HOSED /
      ISN 0030          DATA MEQTRP /4HPAYL, 4HOAD , 4H    , 4H    ,
                       1            4HNUMB, 4HER O, 4HF TR, 4HIPS /
      ISN 0031          DATA MDASH / 4H----, 4H--- , 4H    , 4H    ,
                       1            4H----, 4H-- -, 4H- --, 4H--- /
      ISN 0032          DATA IUNIT /4H$/TO, 4H$/CY, 4H$/SY, 4HN   , 4H    , 4H/IN.,
                       1           4H    , 4H    , 4H    /
      ISN 0033          DATA HEAD /4HSING, 4HLE A, 4HXLE , 4HLOAD, 4HS   ,
                       1          4HTAND, 4HEM A, 4HXLE , 4HLOAD, 4HS   ,
                       2          4HTRIP, 4HLE A, 4HXLE , 4HLOAD, 4HS   ,
                       3          4HGROS, 4HS VE, 4HHICL, 4HE WE, 4HIGHT,
                       4          4HEMPT, 4HY VE, 4HHICL, 4HE WE, 4HIGHT,
                       5          4HSTEE, 4HRING, 4H AXL, 4HE LO, 4HADS /
      ISN 0034          DATA NAMES /4HAXLE, 4HS WE, 4HIGHE, 4HD   ,
                       1           4HVEHI, 4HCLES, 4H WEI, 4HGHED/
      ISN 0035          DATA ITYPE /4HTYPE/
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  ISN 0036             OLDMNT = SAVMNT
  ISN 0037             IF (MFLG .EQ. 0) OLDMNT = 0.
  ISN 0039             IF(IOUT.EQ.0) GO TO 3500
  ISN 0041             CALL NPAGE
  ISN 0042             DO 2515 J=1,3
  ISN 0043             WRITE (LO,2510) (TITLE(I,J),I=1,20)
  ISN 0044        2510 FORMAT(1X,20A4)
  ISN 0045        2515 CONTINUE
  ISN 0046             WRITE (LO,2517) SECTTL
  ISN 0047        2517 FORMAT(/1X,20A4)
  ISN 0048             WRITE (LO,2520) NYAP, AGR, PCTINT
  ISN 0049        2520 FORMAT(//5X,14HRUN PARAMETERS/5X,3H---,1X,10(1H-)//
                     1        8X,26HLENGTH OF ANALYSIS PERIOD ,27(1H-),I10,6H YEARS/
                     2        8X,33HANNUAL GROWTH RATE OF 18 KIP EAL ,20(1H-),F10.2,
                     2           13H PERCENT/YEAR/
                     3        8X,53HANNUAL INTEREST RATE FOR PRESENT WORTH CALCULATIONS -
                     3          ,F10.2,13H PERCENT/YEAR)
  ISN 0050             I = IEQTRP + 1
  ISN 0051             WRITE (LO,2522) (MEQTRP(J,I),J=1,4), (MDASH(J,I),J=1,4)
  ISN 0052        2522 FORMAT(/8X,48HNUMBER OF 18-KIP ESAL UNDER PROPOSED REGULATIONS/
                     1         8X,50HDERIVED FROM 18-KIP ESAL UNDER PRESENT REGULATIONS/
                     2         8X,28HAND THE ASSUMPTION OF EQUAL ,4A4/36X,4A4)
  ISN 0053             IF (IP .EQ. IR) GO TO 2570
  ISN 0055             WRITE (LO,2530) NLAY, WLANE, SS, R
  ISN 0056        2530 FORMAT(//5X,18HFLEXIBLE STRUCTURE/5X,8(1H-),1X,9(1H-)//
                     1        8X,17HNUMBER OF LAYERS ,11(1H-),I10/
                     2        8X,11HLANE WIDTH ,17(1H-),F10.2,5H FEET/
                     3        8X,20HDESIGN SOIL SUPPORT ,8(1H-),F10.2/
                     4        8X,16HREGIONAL FACTOR ,12(1H-),F10.2)
  ISN 0057        2535 WRITE (LO,2540)
  ISN 0058        2540 FORMAT(/8X,9HMATERIALS/8X,9(1H-)//
                     1        10X,5HLAYER,4X,9HTHICKNESS,3X,10HSTRUCTURAL,4X,8HMATERIAL/
                     2        10X,6HNUMBER,5X,5H(IN.),5X,11HCOEFFICIENT,5X,4HCODE/
                     3        10X,6(1H-),3X,9(1H-),3X,11(1H-),3X,8(1H-)/)
  ISN 0059             DO 2560 I=1,NLAY
  ISN 0060             M = MTYPE(I)
  ISN 0061             WRITE (LO,2550) I, THICK(I), STRC(I), MCODE(I),(MATLAB(J,M),J=1,5)
  ISN 0062        2550 FORMAT(12X,I1,F13.2,F12.3,9X,A4,2X,5A4)
  ISN 0063        2560 CONTINUE
  ISN 0064             GO TO 2590
  ISN 0065        2570 WRITE (LO,2580) NLAY, WLANE, XK, SC, E
  ISN 0066        2580 FORMAT(//5X,15HRIGID STRUCTURE/5X,5(1H-),1X,9(1H-)//
                     1        8X,17HNUMBER OF LAYERS ,19(1H-),I12/
                     A        8X,11HLANE WIDTH ,25(1H-),F12.1,5H FEET/
                     2        8X,16HSUBBASE MODULUS ,20(1H-),F12.0,5H  PCI/
                     3        8X,14HFLEX STRENGTH ,22(1H-),F12.0,5H  PSI/
                     4        8X,17HCONCRETE MODULUS ,19(1H-),F12.0,5H  PCI)
  ISN 0067             IF (IP .NE. IR) GO TO 2535
  ISN 0069             WRITE (LO,2600)
  ISN 0070        2600 FORMAT(/8X,9HMATERIALS/8X,9(1H-)//
                     1        10X,5HLAYER,4X,9HTHICKNESS,4X,8HMATERIAL/
                     2        10X,6HNUMBER,5X,5H(IN.),8X,4HCODE/
                     3        10X,6(1H-),3X,9(1H-),4X,8(1H-)/)
  ISN 0071             DO 2620 I=1,NLAY
  ISN 0072             M = MTYPE(I)
  ISN 0073             WRITE (LO,2610) I, THICK(I), MCODE(I), (MATLAB(J,M),J=1,5)
  ISN 0074        2610 FORMAT(12X,I1,F13.2,8X,A4,3X,5A4)
  ISN 0075        2620 CONTINUE
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ISN 0076      2590 WRITE (LO,3000) PICON, PTERM, PIOV, ATP, OVLIF
ISN 0077      3000 FORMAT(//5X,11HPERFORMANCE/5X,11(1H-)//
                  1        8X,21HPSI INITIAL CONSTANT ,51(1H-),F10.2/
                  2        8X,13HTERMINAL PSI ,59(1H-),F10.2/
                  3        8X,18HPSI AFTER OVERLAY ,54(1H-),F10.2/
                  5        8X,49HAVERAGE AGE AT TERMINAL PSI FOR EXISTING DESIGN -,
                  6           23(1H-),F10.2,6H YEARS/
                  5        8X,20HOVERLAY DESIGN LIFE ,52(1H-),F10.2,6H YEARS)
ISN 0078           CALL NPAGE
ISN 0079           WRITE (LO,3010) FLRP
ISN 0080      3010 FORMAT(5X,16HAGE DISTRIBUTION/5X,4H--- ,12(1H-)//
                  A        5X,39HLOSS RATE FACTOR FOR MILEAGE IN POTTS -,F6.2//
                  1        11X,3(4HLANE,14X,4HLOSS,15X)/
                  2         5X,3(3HAGE,3X,5HMILES,4X,5HVALUE,4X,4HRATE,9X)/
                  3         5X,3(3H---,3X,5H-----,4X,5H-----,4X,4H----,9X)/)
ISN 0081           NLINES = MINO(NASL,MAXLN)
ISN 0082           DO 3030 J=1,NLINES
ISN 0083           WRITE (LO,3020) (I, YLM(I), VI(I), RI(I), I=J,NASL,MAXLN)
ISN 0084      3020 FORMAT(5X,3(I2,F9.1,F10.0,F8.2,8X))
ISN 0085      3030 CONTINUE
ISN 0086           WRITE (LO,3035)
ISN 0087      3035 FORMAT(/10X,29HVALUE IN THOUSANDS OF DOLLARS/
                  1        /10X,29HLOSS RATE IN PERCENT PER YEAR)
ISN 0088           WRITE (LO,3040) PPVDSH, WPSH, WGSH, CACI, (IUNIT(I),I=ICAC,9,3),
                  1                 CGRI, (IUNIT(I),I=ICGR,9,3)
ISN 0089      3040 FORMAT(//5X,7HOVERLAY/5X,7(1H-)//
                  1        8X,27HPERCENT OF PAVED SHOULDERS ,11(1H-),F10.2,8H PERCENT/
                  2        8X,38HAVERAGE PAVED SHOULDER WIDTH/LANE ----,F10.2,5H FEET/
                  A        8X,38HAVERAGE GRANULAR SHOULDER WIDTH/LANE -,F10.2,5H FEET/
                  3        8X,17HUNIT COST OF ACP ,21(1H-),F10.2,1X,3A4/
                  4        8X,22HUNIT COST OF GRANULAR ,16(1H-),F10.2,1X,3A4)
ISN 0090           IF (ICAC .NE. 1) GO TO 3044
ISN 0092           WRITE (LO,3042) ACDENS
ISN 0093      3042 FORMAT(8X,24HDENSITY OF COMPACTED AC ,14(1H-),F10.2,
                  1           12H LBS/CU. FT.)
ISN 0094      3044 IF (ICGR .NE. 1) GO TO 3048
ISN 0096           WRITE (LO,3046) GRDENS
ISN 0097      3046 FORMAT(8X,30HDENSITY OF COMPACTED GRANULAR ,8(1H-),F10.2,
                  1        12H LBS/CU. FT.)
ISN 0098      3048 IARM1 = IARMS + 1
ISN 0099           IF (MFLG .EQ. 0) GO TO 3130
ISN 0101           IF (MFLG .EQ. 2) GO TO 3060
ISN 0103           IDJ = DISTCT
ISN 0104           WRITE (LO,3050) MCRAM(IARM1), UNTCST(4), IDJ
ISN 0105      3050 FORMAT(//5X,17HMODEL MAINTENANCE/5X,5(1H-),1X,11(1H-)//
                  1        8X,26HACCELERATED MAINTENANCE - ,A4//
                  2        8X,25HUNIT COSTS OF MAINTENANCE/
                  3        8X,4(1H-),1X,5(1H-),4H -- ,11(1H-)//
                  4        8X,F11.2,2X,16HPER ONE DISTRESS,//
                  5        8X,8HDISTRICT,I5)
ISN 0106           CALL NPAGE
ISN 0107           WRITE (LO,3051)
ISN 0108      3051 FORMAT(8X,40HMAINTENANCE COSTS PER LANE-MILE PER YEAR/
                  1        8X,11(1H-),1X,5(1H-),5H --- ,9(1H-),5H --- ,4(1H-)///
                  2        12X,4HYEAR,3X,8HFLEXIBLE,3X,5HRIGID,3X,9HCOMPOSITE/
                  3        12X,4H----,3X,8(1H-),3X,5(1H-),3X,9(1H-)//)
ISN 0109           WRITE (LO,3052) (I, (USRMDL(I,J),J=1,3), I=1,24)
ISN 0110      3052 FORMAT(13X,I2,F10.2,F9.2,F10.2)
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ISN 0111              GO TO 3250
ISN 0112         3060 CONTINUE
ISN 0113              CALL NPAGE
ISN 0114              WRITE (LO,3070) MCRAM(IARM1)
ISN 0115         3070 FORMAT(//5X,22HHISTORICAL MAINTENANCE/5X,10(1H-),1X,11(1H-)//
                    1        8X,26HACCELERATED MAINTENANCE - ,A4//
                    2        8X,40HMAINTENANCE COSTS PER LANE-MILE PER YEAR/
                    3        8X,11(1H-),1X,5(1H-),5H --- ,9(1H-),1X,4H--- ,4(1H-)//)
ISN 0116              NLINES = MINO(NYAP,MAXLN)
ISN 0117              WRITE (LO,3075)
ISN 0118         3075 FORMAT(8X,17HFLEXIBLE PAVEMENT/8X,8(1H-),1X,8(1H-)//)
ISN 0119              DO 3090 J=1,NLINES
ISN 0120              WRITE (LO,3080) (I, USRMDL(I,1), I=J,24,MAXLN)
ISN 0121         3080 FORMAT(10X,6(I2,F10.0,8X))
ISN 0122         3090 CONTINUE
ISN 0123              WRITE (LO,3105)
ISN 0124         3105 FORMAT(/8X,14HRIGID PAVEMENT/8X,5(1H-),1X,8(1H-)//)
ISN 0125              DO 3120 J=1,NLINES
ISN 0126              WRITE (LO,3080) (I,USRMDL(I,2), I=J,24,MAXLN)
ISN 0127         3120 CONTINUE
ISN 0128              GO TO 3250
ISN 0129         3130 WRITE (LO,3140)
ISN 0130         3140 FORMAT(///51H NO ROUTINE MAINTENANCE CONSIDERED IN THIS PROBLEM.)
ISN 0131         3250 CALL NPAGE
ISN 0132              PPFF = PPF * 100.
ISN 0133              WRITE (LO,3260) OLDMNT, PPFF
ISN 0134         3260 FORMAT(5X,12HOLD SECTIONS/5X,4H--- ,8(1H-)//
                    1        8X,46HMAINTENANCE COST (DOLLARS/LANE MILE/YEAR) FOR ,
                    2            15HPAVEMENTS OLDER/
                    3        8X,29HTHAN TERMINAL SERVICEABILITY ,32(1H-),F10.2//
                    4        8X,40HPERCENT OF TOTAL LANE MILES IN POTTS AT /
                    5       13X,42HBEGINNING OF ANALYSIS PERIOD (CALCULATED) ,14(1H-),
                    6            F10.2)
ISN 0135              IF (IPOT .EQ. 0) GO TO 3320
ISN 0137              IF (IPOT .EQ. 2) GO TO 3280
ISN 0139              WRITE (LO,3270) TPFPC, PFNOPC
ISN 0140         3270 FORMAT(13X,44HEND OF ANALYSIS PERIOD (INPUT TARGET VALUE) ,
                    6            12(1H-),F10.2//
                    2        8X,43HPERCENT OF TOTAL LANE MILES NEVER OVERLAID ,
                    3            18(1H-),F10.2)
ISN 0141              GO TO 3320
ISN 0142         3280 WRITE (LO,3290) PCTINF
ISN 0143         3290 FORMAT(8X,52HINFLATION RATE TO DEFLATE THE PROJECTED DOLLARS PER /
                    1        8X,49HYEAR FOR OVERLAY FUNDING FOR THIS REPRESENTATIVE ,
                    2            10HSECTION --,F10.2//
                    3        8X,30HANNUAL PROJECTED OVERLAY FUNDS/8X,30(1H-)//
                    4       18X,7HPRESENT,5X,6HFUTURE/18X,7(1H-),5X,6(1H-)//)
ISN 0144              DO 3310 I=1,NYAP
ISN 0145              WRITE (LO,3300) I, (APOF(I,J),J=1,2)
ISN 0146         3300 FORMAT(12X,I2,F11.1,F13.1)
ISN 0147         3310 CONTINUE
ISN 0148         3320 CONTINUE
ISN 0149              K = 0
ISN 0150              NUM = NTT
ISN 0151         3321 K = K+1
ISN 0152              CALL NPAGE
ISN 0153              WRITE (LO,3330) (IPRFT(I,K),I=1,2), ((TTYP(M,J),M=1,2),J=1,NUM),
                    1 TOTL
```

```
ISN 0154        3330 FORMAT(//5X,11HTRUCK TYPES,5X,2A4/5X,5(1H-),1X,5(1H-)//
                    1       10X,4HTYPE,3X,11(2A4,2X))
ISN 0155             WRITE (LO,3333) ((NAXLES(M,J),J=1,4),M=1,NUM)
ISN 0156        3333 FORMAT(/5X,9HAXLE CODE,3X,10(4I1,6X))
ISN 0157             WRITE (LO,3335)
ISN 0158        3335 FORMAT(/10X,4HYEAR,3X,23HPERCENT OF ALL VEHICLES//)
ISN 0159             DO 3350 I=1,NYAP
ISN 0160             WRITE (LO,3340) I, (PTTYP(J,I,K), J=1,NTT), PCTTR(I,K)
ISN 0161        3340 FORMAT(11X,I2,4X,11(F5.2,5X))
ISN 0162        3350 CONTINUE
ISN 0163             NTT = INTT
ISN 0164             IF ((NATT .GT. 0) .AND. (K .EQ. 1)) GO TO 3321
ISN 0166             IF (NEWTRK .LT. 2) GO TO 3500
ISN 0168             CALL NPAGE
ISN 0169             WRITE (LO,3053) PGVWL, PSAL, PTAL, PTRAL, FGVWL, FSAL, FTAL, FTRAL
ISN 0170        3053 FORMAT(5X,11HLOAD LIMITS/5X,4(1H-),1X,6(1H-)//
                    1       8X,36HPRESENT GROSS VEHICLE WEIGHT LIMIT -,F10.0,5H KIPS/
                    2       8X,36HPRESENT SINGLE AXLE WEIGHT LIMIT ---,F10.0,5H KIPS/
                    3       8X,36HPRESENT TANDEM AXLE WEIGHT LIMIT ---,F10.0,5H KIPS/
                    4       8X,36HPRESENT TRIPLE AXLE WEIGHT LIMIT ---,F10.0,5H KIPS/
                    5       8X,36HFUTURE GROSS VEHICLE WEIGHT LIMIT --,F10.0,5H KIPS/
                    6       8X,36HFUTURE SINGLE AXLE WEIGHT LIMIT ----,F10.0,5H KIPS/
                    7       8X,36HFUTURE TANDEM AXLE WEIGHT LIMIT ----,F10.0,5H KIPS/
                    8       8X,36HFUTURE TRIPLE AXLE WEIGHT LIMIT ----,F10.0,5H KIPS)
ISN 0171             WRITE (LO,3055)
ISN 0172        3055 FORMAT(//23X,7HPRESENT,11X,6HFUTURE/
                    1       16X,2(4X,13HSTEERING AXLE),6X,16HPERCENT INCREASE/
                    2       10X,5HTRUCK,8X,6HWEIGHT,11X,6HWEIGHT,10X,
                    3           15HIN EMPTY WEIGHT/
                    4       10X,4HTYPE,9X,6H(KIPS),11X,6H(KIPS),15X,6H(KIPS)/
                    5       10X,5(1H-),5X,13(1H-),4X,13(1H-),6X,16(1H-)/)
ISN 0173             DO 3058 I=1,NTT
ISN 0174             WRITE (LO,3057) (TTYP(J,I),J=1,2), PSTAW(I), FSTAW(I), EPI(I)
ISN 0175        3057 FORMAT(8X,2A4,4X,F10.3,5X,F13.3,8X,F11.2)
ISN 0176        3058 CONTINUE
ISN 0177             NTT = INTT
ISN 0178             DO 3490 K=1,6
ISN 0179             NLD = NLDI(K)
ISN 0180             GO TO (3380, 3410, 3430, 3450, 3470, 3403) , K
ISN 0181        3380 IF (NT(1) .EQ. 0) GO TO 3490
ISN 0183             BLI = STARTS(K)
ISN 0184             CALL NPAGE
ISN 0185             WRITE (LO,3370) (HEAD(N,K),N=1,5), NLDI(K), (NAMES(N,1),N=1,4),
                    1                 (ITYPE,I=1,NTT)
ISN 0186        3370 FORMAT(5X,5A4/5X,6(1H-),1X,4(1H-),1X,5(1H-)//
                    1       8X,26HNUMBER OF LOAD INTERVALS -,I6//
                    2       14X,4HLOAD,11X,10HNUMBER OF ,4A4/
                    3       12X,8HINTERVAL/
                    4       30X,10(A4,6X))
ISN 0187             WRITE (LO,3371) ((TTYP(M,N),M=1,2),N=1,NTT)
ISN 0188        3371 FORMAT(30X,10(2A4,2X))
ISN 0189             WRITE (LO,3372)
ISN 0190        3372 FORMAT (/)
ISN 0191             DO 3400 L=1,NLD
ISN 0192             WRITE (LO,3390) BLI, SA(L,11), (SA(L,J),J=1,NTT)
ISN 0193        3390 FORMAT(7X,F7.3,3H - ,F7.3,3X,10(F6.0,4X))
ISN 0194             BLI = AINT(SA(L,11) * 10. + 0.5) / 10.
ISN 0195        3400 CONTINUE
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ISN 0196               GO TO 3490
ISN 0197          3410 IF (NT(2) .EQ. 0) GO TO 3490
ISN 0199               BLI = STARTS(K)
ISN 0200               CALL NPAGE
ISN 0201               WRITE (LO,3370) (HEAD(N,K),N=1,5), NLDI(K), (NAMES(N,1),N=1,4),
                      1                (ITYPE,I=1,NTT)
ISN 0202               WRITE (LO,3371) ((TTYP(M,N),M=1,2),N=1,NTT)
ISN 0203               WRITE (LO,3372)
ISN 0204               DO 3420 L=1,NLD
ISN 0205               WRITE (LO,3390) BLI, TA(L,11), (TA(L,J),J=1,NTT)
ISN 0206               BLI = AINT(TA(L,11) * 10. + 0.5) / 10.
ISN 0207          3420 CONTINUE
ISN 0208               GO TO 3490
ISN 0209          3430 IF (NT(3) .EQ. 0) GO TO 3490
ISN 0211               BLI = STARTS(K)
ISN 0212               CALL NPAGE
ISN 0213               WRITE (LO,3370) (HEAD(N,K),N=1,5), NLDI(K), (NAMES(N,1),N=1,4),
                      1                (ITYPE,I=1,NTT)
ISN 0214               WRITE (LO,3371) ((TTYP(M,N),M=1,2),N=1,NTT)
ISN 0215               WRITE (LO,3372)
ISN 0216               DO 3440 L=1,NLD
ISN 0217               WRITE (LO,3390) BLI, TR(L,11), (TR(L,J),J=1,NTT)
ISN 0218               BLI = AINT(TR(L,11) * 10. + 0.5) / 10.
ISN 0219          3440 CONTINUE
ISN 0220               GO TO 3490
ISN 0221          3450 CALL NPAGE
ISN 0222               WRITE (LO,3370) (HEAD(N,K),N=1,5), NLDI(K), (NAMES(N,2),N=1,4),
                      1                (ITYPE,I=1,NTT)
ISN 0223               WRITE (LO,3371) ((TTYP(M,N),M=1,2),N=1,NTT)
ISN 0224               WRITE (LO,3372)
ISN 0225               BLI = STARTS(K)
ISN 0226               DO 3460 L=1,NLD
ISN 0227               WRITE (LO,3390) BLI, VG(L,11), (VG(L,J),J=1,NTT)
ISN 0228               BLI = AINT(VG(L,11) * 10. + 0.5) / 10.
ISN 0229          3460 CONTINUE
ISN 0230               GO TO 3490
ISN 0231          3470 CALL NPAGE
ISN 0232               WRITE (LO,3370) (HEAD(N,K),N=1,5), NLDI(K), (NAMES(N,2),N=1,4),
                      1                (ITYPE,I=1,NTT)
ISN 0233               WRITE (LO,3371) ((TTYP(M,N),M=1,2),N=1,NTT)
ISN 0234               WRITE (LO,3372)
ISN 0235               BLI = STARTS(K)
ISN 0236               DO 3480 L=1,NLD
ISN 0237               WRITE (LO,3390) BLI, VE(L,11), (VE(L,J),J=1,NTT)
ISN 0238               BLI = AINT(VE(L,11) * 10. + 0.5) / 10.
ISN 0239          3480 CONTINUE
ISN 0240               GO TO 3490
ISN 0241          3403 IF (IDST .NE. 6) GO TO 3490
ISN 0243               CALL NPAGE
ISN 0244               WRITE (LO,3370) (HEAD(N,K),N=1,5), NLDI(K), (NAMES(N,1),N=1,4),
                      1                (ITYPE,I=1,NTT)
ISN 0245               WRITE (LO,3371) ((TTYP(M,N),M=1,2),N=1,NTT)
ISN 0246               WRITE (LO,3372)
ISN 0247               BLI = STARTS(K)
ISN 0248               DO 3407 L=1,NLD
ISN 0249               WRITE (LO,3390) BLI, ST(L,11), (ST(L,J),J=1,NTT)
ISN 0250               BLI = AINT(ST(L,11) * 10. + 0.5) / 10.
ISN 0251          3407 CONTINUE
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  ISN 0252       3490 CONTINUE
  ISN 0253       3500 CONTINUE
  ISN 0254            RTINT = PCTINT * 0.01
  ISN 0255            RTINF = PCTINF * 0.01
  ISN 0256            TPF = TPFPC*.01
  ISN 0257            PFNO = PFNOPC * 0.01
  ISN 0258            AGF = AGR * 0.01
  ISN 0259            CAC = CACI
  ISN 0260            CGR = CGRI
  ISN 0261            IF (ICAC .EQ. 1) GO TO 4000
  ISN 0263            IF (ICAC .EQ. 2) GO TO 4010
  ISN 0265            CAC = CACI * 36.
  ISN 0266            GO TO 4010
  ISN 0267       4000 CAC = CACI * (ACDENS * 27.) / 2000.
  ISN 0268       4010 IF (ICGR .EQ. 2) GO TO 99999
  ISN 0270            IF (ICGR .EQ. 1) GO TO 4020
  ISN 0272            CGR = CGRI * 36.
  ISN 0273            GO TO 99999
  ISN 0274       4020 CGR = CGRI * (GRDENS * 27.) / 2000.
  ISN 0275      99999 RETURN
  ISN 0276            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =     275, PROGRAM SIZE =     11248, SUBPROGRAM NAME =INPRNT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      64K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE INIT (IGO)
   ISN 0003          COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0004          COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0005          COMMON /STRCOE/ STRCD(8),CC(4),MC(11),NC,STRC(5),RFS(4),RFB(4)
   ISN 0006          COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0007          DATA ICON, F /2, 1, /
               C     ICON IS THE INDEX ON CONDITION FACTOR USED TO RELATE AN  OLD PCC
               C     PAVEMENT WITH AN AC OVERLAY TO AN EQUIVALENT SLAB THICKNESS.
               C     F IS A FACTOR ALSO USED IN THE ABOVE RELATION.
   ISN 0008          GO TO (100, 200, 300), IGO
               C     HERE FOR PROGRAM INITIALIZATION, FIRST EXECUTION.
   ISN 0009      100 DO 110 J=1,NYR
   ISN 0010          YR(J) = FLOAT(J)
   ISN 0011      110 CONTINUE
   ISN 0012          GO TO 900
               C
               C     HERE FOR SET UP CHORES AFTER READING INPUT DATA.
   ISN 0013      200 CONTINUE
               C     WE HAVE ALL THE INPUT FOR A REPRESENTATIVE SECTION.  DETERMINE -SN-
               C     OR -D- FOR COMPOSITE PAVTS, AS WELL AS SET UP STRUCTURAL COEF.
   ISN 0014          IF (IP .EQ. IR .OR. IP .EQ. IC) GO TO 230
   ISN 0016          SN = 0.
   ISN 0017          DO 215 L=1,NLAY
   ISN 0018          M = MTYPE(L)
               C     REPLACE VALUE IN DATA STATEMENT WITH VALUE READ IN.
   ISN 0019          IF (STRC(L) .NE. 0.) STRCD(M) = STRC(L)
               C     IF NO VALUE READ IN, SET VALUE FROM THE DATA STATEMENT.
   ISN 0021          IF (STRC(L) .EQ. 0.) STRC(L) = STRCD(M)
   ISN 0023      215 SN = SN + STRC(L)*THICK(L)
               C     SET -A- VALUE FOR OVERLAY = -A- FOR AC IF NOT READ IN SEPARATELY.
   ISN 0024          IF (STRC(5) .EQ. 0.) STRC(5) = STRCD(1)
   ISN 0026          GO TO 250
   ISN 0027      230 XJ = 3.2
               C     CONTINUITY FACTOR FOR PCC PAVEMENTS   3.2 FOR JCP, 2.2 FOR CRC.
               C     TEST FOR COMPOSITE PAVEMENT (AC TOP LAYER READ UNDER -RIGID-.)
   ISN 0028          IF (MTYPE(1) .EQ. 1) GO TO 240
   ISN 0030          D = THICK(1)
   ISN 0031          IF (MTYPE(1) .EQ. 10) XJ = 2.2
   ISN 0033          GO TO 250
               C     EQUIVALENT SLAB THICKNESS FOR INITIALLY COMPOSITE PAVT.
   ISN 0034      240 D = (THICK(1)/2.5 + CC(ICON)*THICK(2))/F
   ISN 0035          IP = IC
   ISN 0036          IF (MTYPE(2) .EQ. 10) XJ = 2.2
   ISN 0038      250 CONTINUE
   ISN 0039          GO TO 900
               C
   ISN 0040      300 CONTINUE
               C
   ISN 0041      900 CONTINUE
   ISN 0042          RETURN
   ISN 0043          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

    ISN 0002              SUBROUTINE POTSET
    ISN 0003              COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
    ISN 0004              COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),
                         1             TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
    ISN 0005              COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
    ISN 0006              COMMON /CMP/ COMP(30,34), PCOMP(30), AATP(30)
    ISN 0007              COMMON /MECH/XKT,NRU,NLH,ND,NDEL
    ISN 0008              COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
    ISN 0009              DIMENSION ZLM(30), P(25)
    ISN 0010              NHIST=25
    ISN 0011              POTTS = 0.0
    ISN 0012              TOTALM = 0.
    ISN 0013              CALL ZERO (COMP,1020)
    ISN 0014              CALL ZERO (PCOMP, 30)
    ISN 0015              DO 7 I=1,NASL
    ISN 0016              TOTALM = TOTALM + XLM(I)
    ISN 0017            7 CONTINUE
    ISN 0018              NSLR = 0
    ISN 0019              CALL DISTR ( P, NHIST)
    ISN 0020              NSLICE = 0
    ISN 0021              DO 55 I=1,30
    ISN 0022           55 ZLM(I) = 0.
    ISN 0023              DO 100 I=1,NASL
    ISN 0024              NSLICE = NSLICE + 1
    ISN 0025              IF (I.EQ.1)  GO TO 83
    ISN 0027              I1=I-1
    ISN 0028              DO 80 J=1,I1
    ISN 0029              TEMP = P(J) * YLM(NSLICE)
    ISN 0030              PCOMP(NSLICE) = PCOMP(NSLICE) + TEMP
    ISN 0031              POTTS = POTTS + TEMP
    ISN 0032           80 CONTINUE
    ISN 0033           83 CONTINUE
    ISN 0034              L = 0
    ISN 0035              DO 90 J=I,NHIST
    ISN 0036              L = L+1
    ISN 0037              COMP(NSLICE,L) = P(J) * YLM(NSLICE)
    ISN 0038      124     IF(PF.GT.PTERM.AND.IP.EQ.IF.AND.L.GT.NDEL)
                         4COMP(NSLICE,L)=(P(J)+P(J-NDEL))*YLM(NSLICE)
    ISN 0040      30      ZLM(L) = ZLM(L) + COMP(NSLICE,L)
    ISN 0041           90 CONTINUE
    ISN 0042          100 CONTINUE
    ISN 0043              DO 140 I=1,NHIST
    ISN 0044              XLM(I) = ZLM(I)
    ISN 0045              IF(XLM(I).GT.0.0) NSLR=NSLR+1
    ISN 0047          140 CONTINUE
    ISN 0048              DO 160 L=1,NSLR
    ISN 0049              SUM = 0.
    ISN 0050              DO 155 I=1,NASL
    ISN 0051          155 SUM = SUM + COMP(I,L) * FLOAT(I+L)
    ISN 0052              AATP(L) = SUM / XLM(L)
    ISN 0053          160 CONTINUE
    ISN 0054              PPF = POTTS / TOTALM
    ISN 0055              RETURN
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LEVEL 2.3.0 (JUNE 78)        POTSET        OS/360  FORTRAN H EXTENDED        DATE 82.147/20.12.48        PAGE    2
  ISN 0056          END
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)
*STATISTICS*     SOURCE STATEMENTS =       55, PROGRAM SIZE =      1708, SUBPROGRAM NAME =POTSET
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                                        132K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                              OS/360  FORTRAN H EXTENDED              DATE 82.147/20.12.52        PAGE   1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE DISTR ( P, N)
   ISN 0003            COMMON /SWTCHS/ OVLIFE, PCTINT, PCTINF, TPFPC, PFNOPC, AGR, SPCJT,
                      1                XMLI, CACI, CGRI, ICAC, ACDENS, ICGR, GRDENS,
                      2                INTT, SAVMNT, IDST, NLD, MCODE(5)
   ISN 0004            COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0005            COMMON /MECH/XKT,NRU,NLH,ND,NDEL
   ISN 0006            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0007            DIMENSION P(25)
   ISN 0008            REAL WX(5,2,2)/20*0.0/,XN(5,2,2)/20*0.0/,AO(5,2,2)/20*0.0/
   ISN 0009            REAL XNO(5,2,2)/20*0.0/,A2(5,2,2)/20*0.0/,SF(5,2,2)/20*0.0/
   ISN 0010            IF(IP.EQ.IF) GO TO 10
   ISN 0012            P(1)=0
   ISN 0013            P(2)=0.
   ISN 0014            P(3)=0.
   ISN 0015            P(4)=0.0125
   ISN 0016            P(5)=.0125
   ISN 0017            P(6)=0.0295
   ISN 0018            P(7)=P(6)
   ISN 0019            P(8)=P(7)
   ISN 0020            P(9)=.03
   ISN 0021            P(10)=P(9)
   ISN 0022            P(11)=.085
   ISN 0023            P(12)=P(11)
   ISN 0024            P(13)=.0325
   ISN 0025            P(14)=P(13)
   ISN 0026            P(15)=.0595
   ISN 0027            P(16)=P(15)
   ISN 0028            P(17)=.0325
   ISN 0029            P(18)=.085
   ISN 0030            P(19)= P(18)
   ISN 0031            P(20)=.03
   ISN 0032            P(21)=.03
   ISN 0033            P(22)=.0295
   ISN 0034            P(23)=P(22)
   ISN 0035            P(24)=P(23)
   ISN 0036            P(25)=.025
   ISN 0037            RETURN
   ISN 0038         10 CONTINUE
   ISN 0039            IF(TPE.EQ.1.0) CALL PSIT(PICON,PF,W1,XKT)
   ISN 0041            IF(PF.LT.PTERM) GOTO 1000
   ISN 0043            WX(1,2,1)=50000.
   ISN 0044            XNO(1,2,1)=3.00
   ISN 0045            XN(1,2,1)=2.75
   ISN 0046            A2(1,2,1)=.511E16
   ISN 0047            SF(1,2,1)=0.85
   ISN 0048            WX(1,2,2)=500000.
   ISN 0049            XNO(1,2,2)=3.2
   ISN 0050            AO(1,2,2)=6.93E21
   ISN 0051            AO(1,2,1)=2.92E17
   ISN 0052            XN(1,2,2)=1.75
   ISN 0053            A2(1,2,2)=0.51E12
   ISN 0054            SF(1,2,2)=0.8
   ISN 0055            WX(1,1,1)=20000.
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ISN 0056          XNO(1,1,1)=3.0
ISN 0057          AO(1,1,1)=1.87E16
ISN 0058          XN(1,1,1)=2.5
ISN 0059          A2(1,1,1)=0.23E14
ISN 0060          SF(1,1,1)=0.8
ISN 0061          WX(1,1,2)=200000.
ISN 0062          XNO(1,1,2)=2.5
ISN 0063          AO(1,1,2)=1.08E16
ISN 0064          XN(1,1,2)=2.5
ISN 0065          A2(1,1,2)=0.73E16
ISN 0066          SF(1,1,2)=0.8
ISN 0067          WX(3,2,1)=5000.
ISN 0068          XNO(3,2,1)=2.3
ISN 0069          AO(3,2,1)=4.45E10
ISN 0070          A2(3,2,1)=1.47E9
ISN 0071          XN(3,2,1)=2.0
ISN 0072          SF(3,2,1)=0.9
ISN 0073          WX(3,1,1)=2000
ISN 0074          XNO(3,1,1)=2.25
ISN 0075          AO(3,1,1)=3.3E9
ISN 0076          A2(3,1,1)=3.64E12
ISN 0077          XN(3,1,1)=2.75
ISN 0078          SF(3,1,1)=0.86
ISN 0079          WX(3,2,2)=5000.
ISN 0080          XNO(3,2,2)=2.3
ISN 0081          AO(3,2,2)=4.45E10
ISN 0082          A2(3,2,2)=1.47E9
ISN 0083          XN(3,2,2)=2.0
ISN 0084          SF(3,2,2)=0.9
ISN 0085          WX(3,1,2)=2000.
ISN 0086          XNO(3,1,2)=2.25
ISN 0087          AO(3,1,2)=3.3E9
ISN 0088          A2(3,1,2)=3.64E12
ISN 0089          XN(3,1,2)=2.75
ISN 0090          SF(3,1,2)=0.86
ISN 0091          WX(4,2,1)=50000.
ISN 0092          XNO(4,2,1)=2.9
ISN 0093          AO(4,2,1)=4.99E16
ISN 0094          A2(4,2,1)=0.26E12
ISN 0095          XN(4,2,1)=2.0
ISN 0096          SF(4,2,1)=0.93
ISN 0097          WX(4,1,1)=20000.
ISN 0098          XNO(4,1,1)=3.0
ISN 0099          AO(4,1,1)=1.22E16
ISN 0100          A2(4,1,1)=0.32E15
ISN 0101          XN(4,1,1)=2.75
ISN 0102          SF(4,1,1)=0.75
ISN 0103          WX(4,2,2)=500000.
ISN 0104          XNO(4,2,2)=3.1
ISN 0105          AO(4,2,2)=9.14E20
ISN 0106          A2(4,2,2)=1.3E15
ISN 0107          XN(4,2,2)=2.25
ISN 0108          SF(4,2,2)=0.92
ISN 0109          WX(4,1,2)=200000.
ISN 0110          XNO(4,1,2)=2.5
ISN 0111          AO(4,1,2)=7.56E15
ISN 0112          A2(4,1,2)=0.17E15
ISN 0113          XN(4,1,2)=2.25
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ISN 0114            SF(4,1,2)=0.95
ISN 0115            GO TO 1005
ISN 0116      1000  WX(1,1,1)=25000.
ISN 0117            A2(1,1,1)=7.028E54
ISN 0118            XN(1,1,1)=10.
ISN 0119            WX(1,2,1)=62500.
ISN 0120            A2(1,2,1)=6.667E58
ISN 0121            XN(1,2,1)=10.
ISN 0122            WX(1,1,2)=250000.
ISN 0123            A2(1,1,2)=7.028E64
ISN 0124            XN(1,1,2)=10.
ISN 0125            WX(1,2,2)=625000.
ISN 0126            A2(1,2,2)=6.703E68
ISN 0127            XN(1,2,2)=10.
ISN 0128            WX(3,1,1)=3000.
ISN 0129            A2(3,1,1)=1.373E44
ISN 0130            XN(3,1,1)=10.
ISN 0131            WX(3,2,1)=6250.
ISN 0132            A2(3,2,1)=2.115E47
ISN 0133            XN(3,2,1)=10.
ISN 0134            WX(3,1,2)=3000.
ISN 0135            A2(3,1,2)=1.373E44
ISN 0136            XN(3,1,2)=10.
ISN 0137            WX(3,2,2)=6250.
ISN 0138            A2(3,2,2)=2.115E47
ISN 0139            XN(3,2,2)=10.
ISN 0140            WX(4,1,1)=25000.
ISN 0141            A2(4,1,1)=2.1E54
ISN 0142            XN(4,1,1)=10.
ISN 0143            WX(4,2,1)=62500.
ISN 0144            A2(4,2,1)=.424E47
ISN 0145            XN(4,2,1)=8.
ISN 0146            WX(4,1,2)=250000.
ISN 0147            A2(4,1,2)=2.1E64
ISN 0148            XN(4,1,2)=10.
ISN 0149            WX(4,2,2)=625000.
ISN 0150            A2(4,2,2)=2.0E68
ISN 0151            XN(4,2,2)=10.
ISN 0152      1005  ACUM=WX(NPT,NRU,NLH)
ISN 0153            TOLD=0.
ISN 0154            DO 2 K=1,N
ISN 0155            ACUM=ACUM+WX(NPT,NRU,NLH)*(1+AGR/100.00)**FLOAT(K)
ISN 0156            XTEMP=A2(NPT,NRU,NLH)
ISN 0157            IF(ND.EQ.1.AND.PTERM.LT.PF)XTEMP=AO(NPT,NRU,NLH)
ISN 0159            ATEMP=XN(NPT,NRU,NLH)
ISN 0160            IF(ND.EQ.1.AND.PTERM.LT.PF)ATEMP=XNO(NPT,NRU,NLH)
ISN 0162            XRE=-1.0*XTEMP/(ACUM**ATEMP)
ISN 0163            IF(XRE.LT.-100.0) XRE=-100.00
ISN 0165            T=EXP(XRE)
ISN 0166            TNEW=T-TOLD
ISN 0167            TOLD=T
ISN 0168         2  P(K)=TNEW
ISN 0169            CALL SUM (P,24,DUMMY)
ISN 0170            P(25)=1.0-DUMMY
ISN 0171            RETURN
ISN 0172            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
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  LEVEL 2.3.0 (JUNE 78)                          OS/360  FORTRAN H EXTENDED                 DATE 82.147/20.12.59          PAGE    1

 REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

 OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                    SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

    ISN 0002               SUBROUTINE EALGET
                     C     THIS ROUTINE CALCULATES THE RATIO OF EAL PER UNIT TIME UNDER THE
                     C     PROPOSED REGULATIONS TO THAT UNDER THE PRESENT REGULATIONS,
                     C     SUBJECT TO THE RESTRAINT OF EQUAL PAYLOAD PER UNIT TIME(IEQTRP=0),
                     C     OR TO THE RESTRAINT OF EQUAL NUMBER OF TRIPS (IEQTRP=1).
    ISN 0003               COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
    ISN 0004               COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
    ISN 0005               COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
    ISN 0006               COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
    ISN 0007               COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
    ISN 0008               COMMON /TRTYP/ TTYP(2,10), PTTYP(10,20,2), PCTTR(20,2),PERCT(4),
                         1           NAXLES(10,4),NT(4), NTTY, NATT, NTT, NEWTRK
    ISN 0009               DIMENSION S1(10), S2(10), T1(10), T2(10)
    ISN 0010               IPVT = IP
    ISN 0011               IF (IP .EQ. IC) IPVT = IR
                     C     CALL -TRAFIC- ONLY IF NEW LIMITS OR WEIGHT DISTRIBUTIONS HAVE BEEN
                     C     READ FOR THIS PROBLEM
    ISN 0013               IF (NEWTRK .GT. 1) CALL TRAFIC
    ISN 0015               CALL EAL18 (SN, D, PTERM, IPVT)
                     C     EAL18 RETURNS 18K EAL PER AVERAGE TRUCK, EALPT, AND PAYLOAD PER
                     C     AVERAGE TRUCK, APPT, FOR EACH TRUCK TYPE.
                     C     FOR EACH YEAR OBTAIN THE (NORMALIZED) TOTAL PAYLOAD AND TOTAL 18K
                     C     EAL
    ISN 0016               DO 10 J=1,NYAP
    ISN 0017               CALL MULT (PTTYP(1,J,1), APPT(1,1), NTTY, S1)
    ISN 0018               CALL MULT (PTTYP(1,J,2), APPT(1,2), NTT , S2)
    ISN 0019               CALL MULT (PTTYP(1,J,1), EALPT(1,1), NTTY, T1)
    ISN 0020               CALL MULT (PTTYP(1,J,2), EALPT(1,2), NTT , T2)
    ISN 0021               CALL SUM (S1, NTTY, SUM1)
    ISN 0022               CALL SUM (S2, NTT, SUM2)
    ISN 0023               CALL SUM (T1, NTTY, TUM1)
    ISN 0024               CALL SUM (T2, NTT, TUM2)
    ISN 0025               IF (IEQTRP .EQ. 0) EALFCT(J) = SUM1*TUM2/(SUM2*TUM1)
    ISN 0027               IF (IEQTRP .EQ. 1) EALFCT(J) = TUM2/TUM1
    ISN 0029            10 CONTINUE
    ISN 0030               RETURN
    ISN 0031               END

 *OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

 *OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

 *STATISTICS*     SOURCE STATEMENTS =       30, PROGRAM SIZE =      1074, SUBPROGRAM NAME =EALGET

 *STATISTICS*  NO  DIAGNOSTICS GENERATED

 ****** END OF COMPILATION ******                                   136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.13.01        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               SUBROUTINE LDSHFT (XN1, XN2, N, M)
                   C      MULTIPLY (EAL/YR, PRESENT REGS.) FOR EACH YEAR BY CORRESPONDING
                   C      RATIO FROM EALGET TO OBTAIN (EAL/YR, PROPOSED).
   ISN 0003               COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
   ISN 0004               DIMENSION XN1(1), XN2(1)
   ISN 0005               XN2(1) = EALFCT(1)*XN1(1)
   ISN 0006               DO 10 J=2,N
                   C      EALFCT(J) IS DEFINED ONLY FOR J .LE. M.
   ISN 0007               FACT = EALFCT(M)
   ISN 0008               IF (J .LE. M) FACT = EALFCT(J)
   ISN 0010            10 XN2(J) = XN2(J-1) + FACT*(XN1(J) - XN1(J-1))
   ISN 0011               RETURN
   ISN 0012               END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       11, PROGRAM SIZE =       532, SUBPROGRAM NAME =LDSHFT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                     136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE LIFCYC
                  C     FOR GIVEN STRUCTURE, EVALUATES AASHO-PREDICTED 18KEAL TO TERMINAL
                  C     PSI, TOTEAL.
                  C     FOR GIVEN GROWTH FACTOR AGF, EQUIVALENT AGE AT OVERLAY, ATPT, AND
                  C     TOTEAL, EVALUATES 18KEAL IN FIRST YEAR OF PAVEMENT LIFE
                  C     LOOPS OVER ALL AGE SLICES, CALLING -CYCLE- FOR EACH
                  C     DEFINES AN AVERAGE TRAFFIC AND OVERLAY DESIGNS FOR PAVEMENT CYCLED
                  C     OUT OF POTTS, AND, FOR PRESENT AND PROPOSED REGULATIONS, OBTAINS
                  C     THE PRODUCT OF COST/(LANE MILE) AND (LANE MILES) FROM -CXLM-.
   ISN 0003             COMMON /CMP/ COMP(30,34), PCOMP(30), AATP(30)
   ISN 0004             COMMON /COSTS/ COSM(20,2), COSV(20,2), COSMS(20,2), COSVS(20,2),
                       1              CSMPW(2), CSVPW(2), CSMUA(2), CSVUA(2)
   ISN 0005             COMMON /DSN/ EALDSN(30,2), EALDNP(20,2)
   ISN 0006             COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0007             COMMON /FUNDS/ APOF(20,2), RTINT, RTINF
   ISN 0008             COMMON /LMP/ XLM(30), YLM(30), POTLM(20,2), OUTP(20,2),
                       1            TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
   ISN 0009             COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
   ISN 0010             COMMON /OUT/ PSIE(30,2), EALREM(30,2), COSTM(20,30,2),CSTOV(30,2)
                       1           ,PSIB(30)
   ISN 0011             COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
   ISN 0012             COMMON / POV/ SNOVP(20,2), THOVP(20,2), CSTOVP(20,2), PP(20,2)
                       1            , RLP(20,2)
   ISN 0013             COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0014             COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0015             COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0016             COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                       *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0017             COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0018             DIMENSION ACCEAL (40,2)
   ISN 0019             EXP10(X) = EXP(X*2.302585)
   ISN 0020             CALL ZERO (SNOV,60)
   ISN 0021             CALL ZERO (THOV,60)
   ISN 0022             CALL ZERO (CSTOV,60)
   ISN 0023             CALL ZERO (TOVLM,60)
   ISN 0024             SATP = ATP
   ISN 0025             IF (IP .EQ. IF.AND.TPE.EQ.1)
                       1      CALL TEXAS (TOTEAL)
   ISN 0027             IF(IP.EQ.IF.AND.TPE.EQ.0) CALL TMECH (TOTEAL)
   ISN 0029             IF (IP .EQ. IR .OR. IP .EQ. IC)
                       1      TOTEAL = EXP10(RWT18L(D,PICON,PTERM) + (4.22-.32*PTERM)*
                       2               RNAASH(D) )
                  C     EAL1 = NUMBER OF EAL IN FIRST YR OF PAVT. LIFE, NOT YEAR 1 OF A. P.
   ISN 0031             DO 10 L=1,NSLR
                  C     YR(I) IS A SEQUENTIAL REAL ARRAY, FROM 1 TO NYR.
                  C     AGE HERE IS THE AGE OF THE CURRENT AGE SLICE AT THE BEG. OF THE A.P.
   ISN 0032             ATP = AATP(L)
                  C     NOTE THAT YR(L) (=L) IS THE YEAR OF THE ANALYSIS PERIOD
                  C     IN WHICH THESE MILES ARE DUE FOR OVERLAY.
   ISN 0033             AGE = ATP - YR(L)
   ISN 0034             IF (AGF .EQ. 0.) EAL1 = TOTEAL/ATP
   ISN 0036             IF (AGF .NE. 0.) EAL1 = TOTEAL*AGF/((1.+AGF)**ATP-1.)
   ISN 0038             CALL CYCLE (L, TOTEAL, AGE, EAL1, ACCEAL)
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LEVEL 2.3.0 (JUNE 78)        LIFCYC          OS/360  FORTRAN H EXTENDED            DATE 82.147/20.13.02        PAGE   2

   ISN 0039         10 CONTINUE
   ISN 0040            NY2  = NYAP/2
   ISN 0041            EALBP = EAL1*(1. + AGF)**NY2
   ISN 0042            DO 20 K=1,2
   ISN 0043            IF (K .EQ. 1) CALL ACCTFC(EALBP, AGF, NYR, ACCEAL(1,1))
   ISN 0045            IF (K .EQ. 2) CALL LDSHFT (ACCEAL(1,1), ACCEAL(1,2), NYR, NYAP)
   ISN 0047            CALL POVDSN (ACCEAL(1,K),SNOVP(1,K),THOVP(1,K),PP(1,K),
                      1            CSTOVP(1,K),RLP(1,K),EALDNP(1,K))
   ISN 0048            CALL CXLM (TOV(1,K),COSTM(1,1,K),CSTOV(1,K),CSTOVP(1,K),APOF(1,K),
                      1          COSM(1,K), COSV(1,K), POTLM(1,K), OUTP(1,K),TOVLM(1,K))
   ISN 0049         20 CONTINUE
   ISN 0050            ATP = SATP
   ISN 0051            RETURN
   ISN 0052            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      51, PROGRAM SIZE =     2212, SUBPROGRAM NAME =LIFCYC

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          128K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

    ISN 0002            SUBROUTINE CYCLE (I, TOTEAL, AGE, EAL1, ACCEAL)
                  C     FOR GIVEN AGE SLICE
                  C     DETERMINES AGE AT BEGINNING OF ANALYSIS PERIOD, AND 18KEAL IN
                  C     FIRST YEAR OF ANALYSIS PERIOD
                  C     USES GROWTH FACTOR TO PROJECT 18KEAL FOR FUTURE YEARS
                  C     GETS TIME, THICKNESS AND COST OF OVERLAY
    ISN 0003            COMMON /DSN/ EALDSN(30,2), EALDNP(20,2)
    ISN 0004            COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
    ISN 0005            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
    ISN 0006            COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
    ISN 0007            COMMON /OUT/ PSIE(30,2),EALREM(30,2),COSTM(20,30,2),CSTOV(30,2),
                       1             PSIB(30)
    ISN 0008            COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
    ISN 0009            COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
    ISN 0010            COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
    ISN 0011            COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
    ISN 0012            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                       *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
    ISN 0013            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
    ISN 0014            DIMENSION DOV(30,2)
    ISN 0015            EQUIVALENCE (SNOV(1,1), DOV(1,1))
    ISN 0016            DIMENSION ACCEAL (40,2)
    ISN 0017            EALAP1 = EAL1*(1. + AGF)**AGE
    ISN 0018            IF (AGF .EQ. 0.) EALBAP = EAL1*AGE
    ISN 0020            IF (AGF .NE. 0.) EALBAP = EAL1*((1.+AGF)**AGE - 1.)/AGF
    ISN 0022            XNREM = TOTEAL - EALBAP
    ISN 0023            CALL ACCTFC (EALAP1, AGF, NYR, ACCEAL(1,1) )
    ISN 0024            CALL LDSHFT (ACCEAL(1,1), ACCEAL(1,2), NYR, NYAP)
    ISN 0025            IF (IP .EQ. IF)  CALL GPSIF (EALBAP,PSIB(I))
    ISN 0027            IF (IP .EQ. IR .OR. IP .EQ. IC) PSIB(I) = GPSIR(EALBAP, PICON, D)
    ISN 0029            IF (XNREM .LE. 0.) XNREM = 1.
    ISN 0031            DO 50 K=1,2
    ISN 0032            IF (K .EQ. 1) TOV(I,K) = FLOAT(I)
                  C     DETERMINE OVERLAY TIME FOR PROPOSED REGULATIONS
                  C     TIME AT WHICH CUMULATIVE 18KEAL FROM BEGINNING OF ANALYSIS PERIOD
                  C     EQUALS REMAINING ALLOWABLE 18KEAL TO TERMINAL PSI.
    ISN 0034            IF (K .EQ. 2) CALL INTERP (ACCEAL(1,2),YR,NYR,XNREM,TOV(I,2))
    ISN 0036            IF (TOV(I,K) .GT. YR(NYAP)) GO TO 40
    ISN 0038            IF (IP .EQ. IR .OR. IP .EQ. IC) GO TO 25
    ISN 0040            CALL SUBCY (ACCEAL(1,K),TOV(I,K), SNOV(I,K), EALREM(I,K),XNOV)
    ISN 0041            CALL OVTHKF (XNOV , THOV(I,K),TOV(I,K))
    ISN 0042            GO TO 30
    ISN 0043         25 CALL SUBCY (ACCEAL(1,K),TOV(I,K), DOV(I,K), EALREM(I,K), XNOV)
    ISN 0044            DEX = D
    ISN 0045            CALL OVTHKR (DOV(I,K), DEX, THOV(I,K))
    ISN 0046         30 CONTINUE
    ISN 0047            CALL OVCOST (THOV(I,K), CSTOV(I,K))
    ISN 0048          3     CONTINUE
    ISN 0049            EALDSN(I,K) = XNOV
    ISN 0050            GO TO 50
    ISN 0051         40 CONTINUE
    ISN 0052            EALREM(I,K) = TOTEAL - EALBAP - ACCEAL(NYAP,K)
    ISN 0053            EALDSN(I,K) = TOTEAL
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   ISN 0054        50 CONTINUE
   ISN 0055           CALL MPPR (I, AGE, EALBAP, ACCEAL, TOTEAL)
   ISN 0056           RETURN
   ISN 0057           END
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*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 56, PROGRAM SIZE = 2236, SUBPROGRAM NAME = CYCLE

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 128K BYTES OF CORE NOT USED

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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE SUBCY  (XNC, YROV, OV, REM, XNOV)
                 C     OBTAINS DESIGN 18KEAL FOR OVERLAY AND CORRESPONDING STRUCTURAL
                 C     NUMBER OR SLAB THICKNESS, D.
                 C     DETERMINES REMAINING LIFE (18KEAL) AT END OF ANALYSIS PERIOD
   ISN 0003            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0004            COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0005            COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0006            COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0007            DIMENSION XNC(1)
   ISN 0008            CALL INTERP (YR, XNC, NYR, YROV, BN)
   ISN 0009            CALL INTERP (YR, XNC, NYR, YROV + OVLIF, EN)
   ISN 0010            XNOV = EN - BN
   ISN 0011            REM = EN - XNC(NYAP)
   ISN 0012            IF (IP .EQ. IR .OR. IP .EQ. IC) GO TO 10
   ISN 0014            OV = 9999999999999.
   ISN 0015            GO TO 20
   ISN 0016         10 CALL GETD (ALOG10(XNOV), PIOV, PTOV, D, DOV)
   ISN 0017            OV = DOV
   ISN 0018         20 CONTINUE
   ISN 0019            RETURN
   ISN 0020            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       19, PROGRAM SIZE =       618, SUBPROGRAM NAME = SUBCY

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.13.07        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE POVDSN (EALC, SNOVP, THOVP, PP, CSTOVP, RL, DL)
                   C     ROUTINE TO DESIGN OVERLAYS FROM THE POT.
                   C     REDUCE PTERM FOR ORIG. PAVT. BY 0.5 TO KEY PROPER CONDITION
                   C     LEVEL IN THICKNESS ROUTINES.
                   C     SNOVP - SN FOR OVERLAY DESIGN OUT OF THE POT (EQUIV. TO DOVP)
                   C     THOVP THICKNESS FOR OVERLAY DESIGN OUT OF THE POT.
                   C     PP     - PSI AT END OF ANALYSIS PERIOD  FOR THESE PAVTS.
   ISN 0003              COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0004              COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0005              COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0006              COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0007              COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                        *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0008              COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0009              DIMENSION EALC(1), SNOVP(1), THOVP(1), PP(1), CSTOVP(1)
   ISN 0010              DIMENSION RL(1), DL(1)
   ISN 0011              PTS = PTERM
   ISN 0012              IF(IP.EQ.IR.OR.IP.EQ.IC)PTERM = PTERM - 0.5
   ISN 0014              IF(IP.EQ.IF) PTERM=PTERM+0.1
   ISN 0016              IF(PTERM.EQ.PFO) PTERM=PTERM+0.05
   ISN 0018              DO 100 J=1,NYAP
   ISN 0019              IF (IP .EQ. IR .OR. IP .EQ. IC) GO TO 25
   ISN 0021              CALL SUBCY (EALC, FLOAT(J), SNOVP(J), EALR, XNOV)
   ISN 0022              CALL OVTHKF (XNOV, THOVP(J),FLOAT(J))
   ISN 0023              IF(PTS.LT.PFO)THOVP(J)=THOVP(J)+0.5
   ISN 0025              XM = XNOV - EALR
   ISN 0026              PP(J) = PIOV
   ISN 0027              IF (XM .GT. 0.)  CALL GPSIF (XM,PP(J))
   ISN 0029              GO TO 90
   ISN 0030           25 CONTINUE
                   C     FOR RIGID DESIGN, SNOVP HOLDS THE VALUE OF DOVP.
   ISN 0031              CALL SUBCY (EALC, FLOAT(J), SNOVP(J), EALR, XNOV)
   ISN 0032              DEX = D
   ISN 0033              CALL OVTHKR (SNOVP(J), DEX, THOVP(J))
   ISN 0034              XM = XNOV - EALR
   ISN 0035              PP(J) = PIOV
   ISN 0036              IF (XM .GT. 0.) PP(J) = GPSIR(XM, PIOV, SNOVP(J))
   ISN 0038           90 CALL OVCOST (THOVP(J), CSTOVP(J))
   ISN 0039              RL(J) = EALR
   ISN 0040              DL(J) = XNOV
   ISN 0041          100 CONTINUE
   ISN 0042              PTERM = PTS
   ISN 0043              RETURN
   ISN 0044              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       43, PROGRAM SIZE =      1534, SUBPPOGRAM NAME =POVDSN

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    132K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE OVCOST (THOV, OVCST)
                C      OBTAINS COST/(LANE MILE) FOR GIVEN OVERLAY THICKNESS
   ISN 0003            COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
   ISN 0004            DATA C1/16.2962963/
                C      COSTS ARE INPUT TO THIS ROUTINE IN DOLLARS/CU YD.
                C      C1 IS THE NUMBER OF CUBIC YDS IN A LAYER 1 MILE BY 1 FOOT BY 1 IN.
                C
   ISN 0005            F = PPVDSH/100.
   ISN 0006            TH = THOV
                C      FIND THE VOLUME/(LANE MILE) OF ROAD OVERLAY, OF PAVED SHOULDER
                C      OVERLAY, AND OF GRANULAR SHOULDER OVERLAY
   ISN 0007            VPO = WLANE*TH*C1
   ISN 0008            VPSO = WPSH*TH*C1
   ISN 0009            VGSO = WGSH*TH*C1
                C      PAVEMENT OVERLAY COST
   ISN 0010            PVTOC = VPO*CAC
                C      UNPAVED SHOULDER OVERLAY COST
   ISN 0011            UPSHOC = CGR*(1.-F)*VGSO
                C      PAVED SHOULDER COST
   ISN 0012            PSHOC = CAC*F*VPSO
                C      TOTAL OVERLAY COST
   ISN 0013            OVCST  = PVTOC + UPSHOC + PSHOC
   ISN 0014            RETURN
   ISN 0015            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       14, PROGRAM SIZE =       386, SUBPROGRAM NAME =OVCOST

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        132K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.13.10        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE ACCTFC (TFC1, AGF, NYR, TFCA)
                C       CUMULATIVE TRAFFIC BY YEAR FROM BASE YEAR (18 KIP EAL).
                C       INPUT
                C       TFC1   - 18KIP EAL IN BASE YEAR (YEAR 1)
                C       AGF    - ANNUAL GROWTH FACTOR (PERCENT/100.)
                C       NYR    - NUMBER OF YEARS FOR WHICH ACCUMULATED TRAFFIC DESIRED.
                C       OUTPUT
                C       TFCA   - ARRAY OF CUMULATIVE 18 KIP EAL THROUGH END OF INDEX YEAR.
   ISN 0003             DIMENSION TFCA (NYR)
   ISN 0004             TFCA(1) = TFC1
   ISN 0005             T = TFC1
   ISN 0006             DO 10 I=2,NYR
   ISN 0007             T = T*(1. + AGF)
   ISN 0008             TFCA(I) = TFCA(I-1) + T
   ISN 0009          10 CONTINUE
   ISN 0010             RETURN
   ISN 0011             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       10, PROGRAM SIZE =       398, SUBPROGRAM NAME =ACCTFC

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               SUBROUTINE MPPR (I, AB, CNB, XNA, XNTP)
                    C
                    C     INPUT   AB          - PAVEMENT AGE AT BEGINNING OF ANALYSIS PERIOD.
                    C             TOV(I,K)    - TIME IN THE ANALYSIS PERIOD AT WHICH PAVEMENT
                    C                           SLICE I REACHES TERMINAL PSI AND IS OVERLAID
                    C                           K=1 - PRESENT LIMITS.
                    C                           K=2 - FUTURE LIMITS.
                    C             CNB         - CUMULATIVE EAL ON PAVT TO START OF A.P.
                    C             C
                    C             XNA(J,K)    - CUMULATIVE EAL THRU YEAR J FROM BEG. OF A.P.
                    C             XNTP        - TOTAL EAL TO TERM. PSI (PAVT BEFORE OVERLAY).
                    C             N           - NUMBER OF YEARS IN ANALYSIS PERIOD (A.P.).
                    C             IP          - PAVEMENT TYPE (=IF, IR, OR IC)
                    C
                    C     OUTPUT  P(J,K)      - PSI AT END OF YEAR J, LOAD LIMITS K.
                    C             COSTM(J,K)  - MAINTENANCE COSTS
                    C
                    C     INTERNAL
                    C             PVAGE(J,K)  - PAVEMENT AGE IN YEAR J OF A.P.
                    C                           K=1 - PRESENT LIMITS.
                    C                           K=2 - PROPOSED LIMITS
                    C                           K=3 - PROPOSED LIMITS INTERPOLATED TO PRESENT
                    C                                 LIMITS AT SAME PSI.
                    C
   ISN 0003               COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0004               COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),
                        1              TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
   ISN 0005               COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
   ISN 0006               COMMON /OUT/ PSIE(30,2), EALREM(30,2), COSTM(20,30,2),CSTOV(30,2)
                        1             ,PSIB(30)
   ISN 0007               COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
   ISN 0008               COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0009               COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0010               COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0011               COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                        *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0012               COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0013               DIMENSION DOV(30,2)
   ISN 0014               EQUIVALENCE (SNOV(1,1), DOV(1,1))
   ISN 0015               DIMENSION          XNA(40,2), PVAGE(20,3), P(20,2),NY(2)
   ISN 0016               DO 40 K=1,2
   ISN 0017               NY(K) = INT (TOV(I,K))
   ISN 0018               NA = MIN0(NY(K), NYAP)
   ISN 0019               NY1 = NA
   ISN 0020               IF (NA .EQ. 0) GO TO 12
   ISN 0022               DO 10 J=1,NA
   ISN 0023               PVAGE(J,K) = AB + FLOAT(J)
   ISN 0024               XN = CNB + XNA(J,K)
   ISN 0025               IF (XN .LE. 0.) XN = 1.
   ISN 0027               IF (IP .EQ. IF)  CALL GPSIF (XN,P(J,K))
   ISN 0029               IF (IP .EQ. IR .OR. IP .EQ. IC) P(J,K) = GPSIR(XN, PICON, D)
   ISN 0031            10 CONTINUE
   ISN 0032               IF (NY(K) .GE. NYAP) GO TO 25
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  ISN 0034        12 NA1 = NA + 1
  ISN 0035           YN = XNTP - CNB
  ISN 0036           DO 20 J=NA1,NYAP
  ISN 0037           PVAGE(J,K) = FLOAT(J) - TOV(I,K)
                C    YN IS TOTAL 18K EAL USED IN A.P. BEFORE OVERLAY.
  ISN 0038           XN = XNA(J,K) - YN
  ISN 0039           IF (XN .LE. O.) XN = 1.
  ISN 0041           IF (IP .EQ. IF)  CALL GPSIF (XN,P(J,K))
  ISN 0043           IF (IP .EQ. IR .OR. IP .EQ. IC) P(J,K) = GPSIR(XN, PIOV, DOV(I,K))
  ISN 0045        20 CONTINUE
                C    PSI AT END OF A.P.
  ISN 0046           PSIE(I,K) = P(NYAP,K)
  ISN 0047           GO TO 40
  ISN 0048        25 PSIE(I,K) = P(NYAP,K)
  ISN 0049           IF (TOV(I,K) .EQ. YR(NYAP)) PSIE(I,K) = PIOV
  ISN 0051        40 CONTINUE
  ISN 0052           NA1 = 1
  ISN 0053           IF (IARMS .EQ. 0) GO TO 52
  ISN 0055           IF (NY(1) .LE. 1) GO TO 52
  ISN 0057           NA = MINO(NY(2), NYAP)
  ISN 0058           IF (NA .EQ. 0) GO TO 52
  ISN 0060           DO 50 J=1,NA
  ISN 0061           CALL INTERP (P(1,1), PVAGE(1,1), NY1, P(J,2), PVAGE(J,3))
  ISN 0062        50 IF (PVAGE(J,3) .GT. ATP) PVAGE(J,3) = ATP
  ISN 0064           IF (NY(2) .GE. NYAP) GO TO 60
  ISN 0066           NA1 = NA + 1
  ISN 0067        52 CONTINUE
  ISN 0068           DO 55 J=NA1, NYAP
  ISN 0069           PVAGE(J,3) = PVAGE(J,2)
  ISN 0070        55 CONTINUE
  ISN 0071        60 CONTINUE
  ISN 0072           CALL MAINT (AB, PVAGE(1,1), TOV(I,1), COSTM(1,I,1))
  ISN 0073           CALL MAINT (AB, PVAGE(1,3), TOV(I,2), COSTM(1,I,2))
  ISN 0074           RETURN
  ISN 0075           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      74, PROGRAM SIZE =     2752, SUBPROGRAM NAME =  MPPR

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          124K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               SUBROUTINE CXLM (TOV, COSTM,CSTOV,CSTOVP, APOF,COSM,COSV,
                         1                 PTLM, POUT, TVLM)
                    C     CXLM   COSTS/LANE MILE X LANE MILES
                    C            ALSO MANAGES POTTS BASED ON POTTS OPTION SWITCH.
   ISN 0003               COMMON /LMP/ XLM(30), YLM(30), POTLM(20,2), OUTP(20,2),
                         1             TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
   ISN 0004               COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
   ISN 0005               COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
   ISN 0006               COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0007               DIMENSION TOV(1), COSTM(20,1), CSTOV(1), CSTOVP(1)
   ISN 0008               DIMENSION APOF(1), COSM(1), COSV(1), PTLM(1), POUT(1)
   ISN 0009               DIMENSION TVLM(1), ZLM(30)
   ISN 0010               T = YR(NYAP)
   ISN 0011               SUM = 0.
   ISN 0012               DO 10 I=1,NSLR
   ISN 0013            10 IF (TOV(I) .GT. T) SUM = SUM + XLM(I)
   ISN 0015               GFNO = SUM / TOTALM
   ISN 0016               P = PPF * TOTALM
   ISN 0017               Q = PFNO * TOTALM
   ISN 0018               W = AMAX1(PPF,PFNO)
   ISN 0019               X = (W - PFNO) / (1. - PPF - GFNO)
   ISN 0020               W = AMAX1(TPF,PFNO)
   ISN 0021               Y = (W - PFNO) / (1. - PPF - GFNO)
   ISN 0022               DO 20 I=1,NSLR
   ISN 0023            20 ZLM(I) = XLM(I)
   ISN 0024               BANK = 0.
   ISN 0025               DO 200 J=1,NYAP
   ISN 0026               CM = 0.
   ISN 0027               CV = 0.
   ISN 0028               U=0.
                    C     -IN- AND -OUT- REFER TO IN AND OUT OF THE POT.
   ISN 0029               XOUT = 0.
   ISN 0030               YIN = 0.
   ISN 0031               IF (IPOT .EQ. 2) BANK = BANK + APOF(J)
   ISN 0033               IF(J.GT.NSLR.AND.P.GT.0.0) GO TO 101
   ISN 0035               DO 100 I=1,NSLR
   ISN 0036               CM = CM + COSTM(J,I)*XLM(I)
   ISN 0037               ITOV = TOV(I) + 0.99999
   ISN 0038               IF (ITOV .NE. J) GO TO 100
   ISN 0040               IF (IPOT .EQ. 2) GO TO 50
   ISN 0042               IF (IPOT .EQ. 1) GO TO 40
   ISN 0044               CV = CV + CSTOV(I)*XLM(I)
   ISN 0045               TVLM(I) = XLM(I)
   ISN 0046               GO TO 100
   ISN 0047            40 T = Y*XLM(I)
   ISN 0048               S = X*XLM(I)
   ISN 0049               YIN = YIN + T
   ISN 0050               XOUT = XOUT + S
   ISN 0051               IF(XOUT.GT.P) XOUT=0.85*P
   ISN 0053               CV = CV + CSTOV(I)*(XLM(I) - T)
   ISN 0054               TVLM(I) = XLM(I) - T
   ISN 0055               XLM(I) = XLM(I) + S - T
   ISN 0056               GO TO 100
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  ISN 0057        50 IL = I
  ISN 0058           R = BANK/CSTOV(I)
  ISN 0059           IF(R.GT.P) R=0.0
  ISN 0061           S = AMIN1(R,XLM(I))
  ISN 0062           C = CSTOV(I)*S
  ISN 0063           TVLM(I) = S
  ISN 0064           BANK = BANK - C
  ISN 0065           CV = CV + C
  ISN 0066           U = U + XLM(I) - S
  ISN 0067       100 CONTINUE
  ISN 0068           GO TO 102
  ISN 0069       101 IF(IPOT.EQ.1.AND. P.GT.TOTALM*TPF)XOUT=(P-TOTALM*TPF)/(NYAP-NSLR)
  ISN 0071       102 CONTINUE
  ISN 0072           COSM(J) = CM + P*OLDMNT
  ISN 0073           COSM(J)=COSM(J)*(1+XHCIM)**FLOAT(J)
  ISN 0074           IF (IPOT .EQ. 2) GO TO 150
  ISN 0076           IF (IPOT .EQ. 1) GO TO 140
  ISN 0078           COSV(J) = CV
  ISN 0079           COSV(J)=COSV(J)*(1+XHCIO)**FLOAT(J)
  ISN 0080           GO TO 200
  ISN 0081       140 COSV(J) = CV + XOUT*CSTOVP(J)
  ISN 0082           COSV(J)=COSV(J)*(1+XHCIO)**FLOAT(J)
  ISN 0083           P = P - XOUT + YIN
  ISN 0084           PTLM(J) = P
  ISN 0085           POUT(J) = XOUT
  ISN 0086           GO TO 200
  ISN 0087       150 R = BANK/CSTOVP(J)
  ISN 0088           S = AMIN1(R, AMAX1(P-Q,0.))
  ISN 0089           COSV(J) = CV + S*CSTOVP(J)
  ISN 0090           COSV(J)=COSV(J)*(1+XHCIO)**FLOAT(J)
  ISN 0091           BANK = BANK - S * CSTOVP(J)
  ISN 0092           P = P - S + U
  ISN 0093           XLM(IL) = XLM(IL) - U + S
  ISN 0094           IF (XLM(IL) .GE. 0.) GO TO 190
  ISN 0096           XLM(IL+1) = XLM(IL+1) + ABS(XLM(IL))
  ISN 0097           XLM(IL) = 0.
  ISN 0098       190 CONTINUE
  ISN 0099           PTLM(J) = P
  ISN 0100           POUT(J) = S
  ISN 0101       200 CONTINUE
  ISN 0102           DO 220 I=1,NSLR
  ISN 0103       220 XLM(I) = ZLM(I)
  ISN 0104           RETURN
  ISN 0105           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      104, PROGRAM SIZE =      3278, SUBPROGRAM NAME =  CXLM

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                          124K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002            SUBROUTINE FINANC (IERR)
                C     INCREMENTS SYSTEM/SECTION COUNTERS, STORES CURRENT SYSTEM AND
                C     SECTION TITLE, AND TESTS FOR OVERFLOW.
                C     DETERMINES PRESENT WORTH AND UNIFORM ANNUAL COSTS FROM ARRAYS OF
                C     ANNUAL UNDISCOUNTED COSTS.
  ISN 0003            COMMON /COSTS/ COSM(20,2),COSV(20,2),COSMS(20,2),COSVS(20,2),
                     1               CSMPW(2),CSVPW(2),CSMUA(2),CSVUA(2)
  ISN 0004            COMMON /FUNDS/ APOF(20,2), RTINT, RTINF
  ISN 0005            COMMON /IO/ LI, LO, LD
  ISN 0006            COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),
                     1             TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
  ISN 0007            COMMON /NEWSYS/ NEWSYS
  ISN 0008            COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                     1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                     2              PB,VPB,RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
  ISN 0009            COMMON /SUMARY/ SECTLE(2,10,8),SYSTLE(60,8),NSECT(8),DELC(10,8),
                     1                COSR(10,8),DELCPW(10,8),COSRPW(10,8),DELCUA(10,8),
                     2                COSRUA(10,8),RLRAT(10,8),TLM(10,8),DSLV(10,8),NSYS
  ISN 0010            COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
  ISN 0011            COMMON /TITLE/ TITLE(20,3), SECTTL(20)
  ISN 0012            DIMENSION CSVS(2), CSMS(2)
  ISN 0013            DATA ISYS /0/, MAXSEC, MAXSYS /10,8/
  ISN 0014            IERR = 0
  ISN 0015            IF (NEWSYS .EQ. 0) GO TO 10
  ISN 0017          3 ISYS = ISYS + 1
  ISN 0018            IF (ISYS .GT. MAXSYS) GO TO 98
  ISN 0020            NSYS = ISYS
  ISN 0021            DO 7 I=1,20
  ISN 0022            SYSTLE(I,ISYS) = TITLE(I,1)
  ISN 0023            SYSTLE(I+20,ISYS) = TITLE(I,2)
  ISN 0024          7 SYSTLE(I+40,ISYS) = TITLE(I,3)
  ISN 0025            ISECT = 0
  ISN 0026         10 ISECT = ISECT + 1
  ISN 0027            IF (ISECT .GT. MAXSEC) GO TO 97
  ISN 0029            NSECT(ISYS) = ISECT
  ISN 0030            DO 15 I=1,2
  ISN 0031         15 SECTLE(I,ISECT,ISYS) = SECTTL(I)
  ISN 0032            TLM(ISECT,ISYS) = TOTALM
  ISN 0033            DO 20 K=1,2
  ISN 0034            CALL PWUAC(COSM(1,K),NYAP,RTINT,CSMS(K),CSMPW(K),CSMUA(K))
  ISN 0035            CALL PWUAC(COSV(1,K),NYAP,RTINT,CSVS(K),CSVPW(K),CSVUA(K))
  ISN 0036         20 CONTINUE
  ISN 0037            F = (1. + RTINT)**NYAP
  ISN 0038            PWFN = 1./F
  ISN 0039            UACF = RTINT/(F-1.)
                C     NOTE THAT SALVAGE VALUE IS CONSIDERED A NEGATIVE COST.
                C     IT HAS BEEN MULTIPLIED BY (-1.)
  ISN 0040            S = CSMS(1) + CSVS(1)
  ISN 0041            T = CSMS(2) + CSVS(2)
  ISN 0042            DSV = SV(6,2) - SV(6,1)
  ISN 0043            DSLV(ISECT,ISYS) = DSV
  ISN 0044            DELC  (ISECT,ISYS) = T - S
  ISN 0045            COSR  (ISECT,ISYS) = T/S
```

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  ISN 0046              S = CSMPW(1) + CSVPW(1)
  ISN 0047              T = CSMPW(2) + CSVPW(2) + PWFN*DSV
  ISN 0048              DELCPW(ISECT,ISYS) = T - S
  ISN 0049              COSRPW(ISECT,ISYS) = T/S
  ISN 0050              S = CSMUA(1) + CSVUA(1)
  ISN 0051              T = CSMUA(2) + CSVUA(2) + UACF*DSV
                  C     NOTE THAT THIS UACF (UNIFORM ANNUAL COST FACTOR) MULTIPLIES
                  C     UNDISCOUNTED SALVAGE VALUE, NOT PRESENT WORTH.
  ISN 0052              DELCUA(ISECT,ISYS) = T - S
  ISN 0053              COSRUA(ISECT,ISYS) = T/S
  ISN 0054              CALL REMLIF(RATIO)
  ISN 0055              RLRAT (ISECT,ISYS) = RATIO
  ISN 0056              GO TO 99
  ISN 0057           97 WRITE (LO,197) MAXSEC, ISYS
  ISN 0058          197 FORMAT(/1X,20HTOO MANY SECTIONS (>,I2,12H) FOR SYSTEM, I5,
                      1            31H. DIMENSIONS WOULD BE EXCEEDED.  /
                      2        1X,51HPLEASE CHECK DATA FOR PROPER USE OF -TITLE- KEYWORD
                      3          ,21H TO BEGIN NEW SYSTEM. /
                      4        1X,47HA NEW SYSTEM WILL BE STARTED WITH THIS SECTION.  /)
  ISN 0059              GO TO 3
  ISN 0060           98 WRITE (LO,198) MAXSYS
  ISN 0061          198 FORMAT (/1X,19HTOO MANY SYSTEMS (>,I2,13H) FOR ONE RUN /
                      1        1X,51HPLEASE CHECK DATA FOR PROPER USE OF -TITLE- KEYWORD
                      2          ,21H TO BEGIN NEW SYSTEM. / 1X,19HTHIS RUN WILL STOP
                      3          ,41HAFTER PRINTING RESULTS UP TO THIS SYSTEM. /)
  ISN 0062              IERR = 1
  ISN 0063           99 RETURN
  ISN 0064              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      63, PROGRAM SIZE =     2318, SUBPROGRAM NAME =FINANC

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        120K BYTES OF CORE NOT USED
```

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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002                SUBROUTINE PWUAC (A,NYAP, RTINT, SUM, PW, UAC)
                     C     CALCULATES PRESENT WORTH AND UNIFORM ANNUAL COST FACTORS FOR GIVEN
                     C     INTEREST RATE.
   ISN 0003                DIMENSION A(1), PWF(20)
   ISN 0004                DATA RTOLD /1.E+10/
   ISN 0005                IF (RTINT .EQ. RTOLD) GO TO 15
   ISN 0007                RTOLD = RTINT
   ISN 0008                R = RTINT
   ISN 0009                F = 1./(1.+R)
   ISN 0010                PWF(1) = F
   ISN 0011                DO 10 I=2,20
   ISN 0012             10 PWF(I) = PWF(I-1)*F
   ISN 0013                UACF = R*(1.+R)**NYAP/((1.+R)**NYAP - 1.)
   ISN 0014             15 CONTINUE
   ISN 0015                SUMPW = 0.
   ISN 0016                SUM = 0.
   ISN 0017                DO 20 I=1,NYAP
   ISN 0018                SUM = SUM + A(I)
   ISN 0019                SUMPW = SUMPW + A(I)*PWF(I)
   ISN 0020             20 CONTINUE
   ISN 0021                PW = SUMPW
   ISN 0022                UAC = SUMPW*UACF
   ISN 0023                RETURN
   ISN 0024                END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       23, PROGRAM SIZE =       830, SUBPROGRAM NAME = PWUAC

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   132K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE REMLIF (RATIO)
                  C     OBTAINS TOTAL REMAINING LIFE (EAL TO TERMINAL PSI REMAINING AT END
                  C     OF ANALYSIS PERIOD) OVER ALL COMPONENTS (AGE SLICES) FOR A SECTION.
                  C     FOR BOTH PRESENT AND PROPOSED REGULATIONS.
                  C     FORMS THE RATIO OF THESE TOTALS (PROPOSED/PRESENT)
   ISN 0003             COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),
                       1             TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
   ISN 0004             COMMON /OUT/ PSIE(30,2),EALREM(30,2),COSTM(20,30,2),CSTOV(30,2)
   ISN 0005             COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
   ISN 0006             COMMON /POV/ SNOVP(20,2),THOVP(20,2),CSTOVP(20,2),PP(20,2)
                       1           , RLP(20,2)
   ISN 0007             COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0008             DIMENSION TOTRL(2)
                  C     FORM TOTAL REMAINING LIFE IN (LANE MILE-EAL)
   ISN 0009             DO 20 K=1,2
   ISN 0010             SUM = 0.
   ISN 0011             SUMP = 0.
                  C     SUM OVER TIMELY OVERLAID LANE MILES
                  C     AND OVER MILES NEVER COMING DUE FOR OVERLAY.
   ISN 0012             DO 10 L=1,NSLR
   ISN 0013             Z = TOVLM(L,K)
   ISN 0014             IF (TOV(L,K) .GT. YR(NYAP)) Z = XLM(L)
   ISN 0016          10 SUM = SUM + Z*EALREM(L,K)
   ISN 0017             DO 15 J=1,NYAP
                  C     SUM OVER LANE MILES OVERLAID FROM POTTS
   ISN 0018          15 SUMP = SUMP + OUTP(J,K)*RLP(J,K)
   ISN 0019             TOTRL(K) = SUM + SUMP
   ISN 0020          20 CONTINUE
   ISN 0021             RATIO = TOTRL(2)/TOTRL(1)
   ISN 0022             RETURN
   ISN 0023             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       22, PROGRAM SIZE =       728, SUBPROGRAM NAME =REMLIF

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

    ISN 0002            SUBROUTINE SALVAG
    ISN 0003            COMMON /CMP/ COMP(30,34), PCOMP(30), AATP(30)
    ISN 0004            COMMON /DSN/ EALDSN(30,2), EALDNP(20,2)
    ISN 0005            COMMON /LMP/ XLM(30), YLM(30), POTLM(20,2), OUTP(20,2), TOTALM,
                       1             PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
    ISN 0006            COMMON /OUT/ PSIE(30,2), EALREM(30,2), COSTM(20,30,2), CSTOV(30,2)
                       1            ,PSIB(30)
    ISN 0007            COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
    ISN 0008            COMMON /POV/ SNOVP(20,2), THOVP(20,2), CSTOVP(20,2), PP(20,2),
                       1             RLP(20,2)
    ISN 0009            COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
    ISN 0010            COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                       1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                       2              PB,VPB,RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
    ISN 0011            COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
    ISN 0012            DIMENSION DUM(30), RIP(30)
    ISN 0013            NS = NSLR
    ISN 0014            NY = NYAP
    ISN 0015            SVB = -1000. * DOT(VI, YLM, NASL)
    ISN 0016            DO 5 I=1,NASL
    ISN 0017          5 RIP(I) = RI(I) * .01
    ISN 0018            DO 10 L=1,NS
    ISN 0019            VL(L) = DOT(VI, COMP(1,L), NASL)/XLM(L)
    ISN 0020         10 RL(L) = DOT (RIP, COMP(1,L), NASL) / XLM(L)
    ISN 0021            CALL SUM (PCOMP, NASL, PB)
    ISN 0022            VPB = DOT(VI, PCOMP, NASL)/PB
    ISN 0023            RPB = FLRP * DOT (RIP, PCOMP, NASL) / PB
    ISN 0024            YRNY = FLOAT(NY)
    ISN 0025            DO 100 K=1,2
    ISN 0026            DO 20 L=1,NS
    ISN 0027            MI(L) = INT(TOV(L,K) + 1. - 1.E-5)
    ISN 0028            PL(L) = 0.
    ISN 0029            IF (TOV(L,K) .LE. YRNY) PL(L) = XLM(L) - TOVLM(L,K)
    ISN 0031            U(L) = XLM(L) - PL(L)
    ISN 0032         20 CONTINUE
                  C     SALVAGE VALUE OF EXISTING PAVEMENT EITHER OVERLAID ON TIMELY
                  C     BASIS OR NEVER OVERLAID.
    ISN 0033            SV(1,K) = SALV1(U, VL, RL, NY, NS)
                  C     SALVAGE VALUE OF EXISTING PAVEMENT IN POT AT END OF ANALYSIS
                  C     PERIOD.
    ISN 0034            SV(2,K) = SALV2(OUTP(1,K), DUM)
                  C     SALVAGE VALUE OF EXISTING PAVEMENT OVERLAID FROM POT.
    ISN 0035            SV(3,K) = SALV3 (OUTP(1,K), VP, RP, NY)
                  C     SALVAGE VALUE OF TIMELY OVERLAYS
    ISN 0036            SV(4,K) = SALV4(TOVLM(1,K),CSTOV(1,K),EALREM(1,K),EALDSN(1,K),NS)
                  C     SALVAGE VALUE OF OVERLAYS FROM POT.
    ISN 0037            SV(5,K) = SALV4(OUTP(1,K),CSTOVP(1,K),RLP(1,K),EALDNP(1,K),NY)
                  C     TOTAL SALVAGE VALUE OF REPRESENTATIVE SECTION, UNDISCOUNTED,
                  C     AT END OF ANALYSIS PERIOD.  STORED IN SV(6,K).
    ISN 0038            SV(6,K) = 1000.*(SV(1,K) + SV(2,K) + SV(3,K) ) + SV(4,K) + SV(5,K)
    ISN 0039        100 CONTINUE
    ISN 0040            SV(6,1) = -SV(6,1)
    ISN 0041            SV(6,2) = -SV(6,2)
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  ISN 0042          RETURN
  ISN 0043          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       42, PROGRAM SIZE =      2230, SUBPROGRAM NAME =SALVAG

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                       124K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                     OS/360  FORTRAN H EXTENDED            DATE 82.147/20.13.23      PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             FUNCTION SALV1 (U, V, R, NY, N)
   ISN 0003             DIMENSION U(N), V(N), R(N)
   ISN 0004             S = 0.
   ISN 0005             DO 10 L=1,N
   ISN 0006          10 S = S + U(L)*V(L)*(1. - R(L))**NY
   ISN 0007             SALV1 = S
   ISN 0008             RETURN
   ISN 0009             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       8, PROGRAM SIZE =      494, SUBPROGRAM NAME = SALV1

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                       136K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.13.24       PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             FUNCTION SALV2 (OP, DUM)
   ISN 0003             COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                       1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                       2              PB,VPB,RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
   ISN 0004             DIMENSION OP(20), DUM(30), ONES(30)
   ISN 0005             DO 10 L=1,NS
   ISN 0006             ONES(L) = 1.
   ISN 0007             DUM(L) = 1. - RL(L)
   ISN 0008          10 CONTINUE
   ISN 0009             P(1) = PB - OP(1) + SUMEQ(PL, ONES, ONES, MI, 1, NS)
   ISN 0010             TMP = VPB*(1.-RPB)*(PB-OP(1)) + SUMEQ(VL,PL,DUM,MI,1,NS)
   ISN 0011             VP(1) = TMP/P(1)
   ISN 0012             TMP = RPB*(PB-OP(1)) + FLRP*SUMEQ(RL,PL,ONES,MI,1,NS)
   ISN 0013             RP(1) = TMP / P(1)
   ISN 0014             DO 50 J=2,NY
   ISN 0015             P(J) = P(J-1) - OP(J) + SUMEQ(PL,ONES,ONES,MI,J,NS)
   ISN 0016             DO 20 L=1,NS
   ISN 0017          20 DUM(L) = DUM(L)*(1.-RL(L))
   ISN 0018             TMP = VP(J-1)*(1.-RP(J-1))*(P(J-1) - OP(J))
                       1     +SUMEQ(PL, VL, DUM, MI, J, NS)
   ISN 0019             VP(J) = TMP/P(J)
   ISN 0020             TMP = RP(J-1)*(P(J-1)-OP(J)) +FLRP*SUMEQ(PL,RL,ONES,MI,J,NS)
   ISN 0021             RP(J) = TMP/P(J)
   ISN 0022          50 CONTINUE
   ISN 0023             SALV2 = VP(NY)*P(NY)
   ISN 0024             RETURN
   ISN 0025             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       24, PROGRAM SIZE =      1442, SUBPROGRAM NAME = SALV2

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                       136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                         OS/360  FORTRAN H EXTENDED              DATE 82.147/20.13.26        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               FUNCTION SALV3(OP, VP, RP, NY)
                C         VALUE OF ORIGINAL PAVEMENT OVERLAID FROM POT.
   ISN 0003               DIMENSION OP(20), VP(20), RP(20)
   ISN 0004               S=0.
   ISN 0005               DO 10 J=1,NY
   ISN 0006            10 S = S + OP(J)*VP(J)*(1.-RP(J))**(NY-J)
   ISN 0007               SALV3 = S
   ISN 0008               RETURN
   ISN 0009               END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =        8, PROGRAM SIZE =       498, SUBPROGRAM NAME = SALV3

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                       136K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                       OS/360  FORTRAN H EXTENDED          DATE 82.147/20.13.28       PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             FUNCTION SALV4(OV, C, ER, ED, N)
   ISN 0003             DIMENSION OV(1), C(1), ER(1), ED(1)
   ISN 0004             S = 0.
   ISN 0005             DO 10 I=1,N
   ISN 0006          10 S = S + OV(I)*C(I)*ER(I)/ED(I)
   ISN 0007             SALV4 = S
   ISN 0008             RETURN
   ISN 0009             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       8, PROGRAM SIZE =      474, SUBPROGRAM NAME = SALV4

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED           DATE 82.147/20.13.30       PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              FUNCTION SUMEQ (A, B, C, MI, J, N)
   ISN 0003              DIMENSION A(N), MI(N), B(N), C(N)
                 C       ASSUME INTEGER ARRAY MI IS MONOTONICALLT INCREASING.
   ISN 0004              SUM = 0.
   ISN 0005              DO 10 L=1,N
   ISN 0006              IF (MI(L) .LT. J) GO TO 10
   ISN 0008              IF (MI(L) .GT. J) GO TO 20
   ISN 0010              SUM = SUM + A(L)*B(L)*C(L)
   ISN 0011           10 CONTINUE
   ISN 0012           20 SUMEQ = SUM
   ISN 0013              RETURN
   ISN 0014              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       13, PROGRAM SIZE =       530, SUBPROGRAM NAME = SUMEQ

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  136K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.13.32       PAGE   1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             FUNCTION DOT (A, B, N)
                  C     DOT PRODUCT OF TWO VECTORS A AND B OF LENGTH N.
   ISN 0003             DIMENSION A(N), B(N)
   ISN 0004             SUM = 0.
   ISN 0005             DO 10 I=1,N
   ISN 0006          10 SUM = SUM + A(I)*B(I)
   ISN 0007             DOT = SUM
   ISN 0008             RETURN
   ISN 0009             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       8, PROGRAM SIZE =      366, SUBPROGRAM NAME =    DOT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002           SUBROUTINE OUTPUT (LOCSW)
   ISN 0003           COMMON /TEMPC/ CONTP(25),DISTCT
   ISN 0004           COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
   ISN 0005           COMMON /IO/ LI, LO, LD
   ISN 0006           COMMON /OUTSWH/ IOUT
   ISN 0007           COMMON /TRINDX/ IT
   ISN 0008           COMMON /TRFFIC/ ELVWI(75), APVWE(75), APVWG(75), SAAPV(75),
                     1                TAAPV(75), TRAPV(75), STAPV(75), NGVW
   ISN 0009           COMMON /TRTYP/ TTYP(2,10), PTTYP(10,20,2), PCTTR(20,2),PERCT(4),
                     1               NAXLES(10,4),NT(4), NTTY, NATT, NTT, NEWTRK
   ISN 0010           COMMON /COSTS/ COSM(20,2), COSV(20,2), COSMS(20,2), COSVS(20,2),
                     1               CSMPW(2), CSVPW(2), CSMUA(2), CSVUA(2)
   ISN 0011           COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
   ISN 0012           COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0013           COMMON /LMP/ XLM(30),YLM(30),POTLM(20,2),OUTP(20,2),
                     1             TOTALM, PPF, TPF, PFNO, NASL, NSLR, TOVLM(30,2)
   ISN 0014           COMMON /OUT/ PSIE(30,2), EALREM(30,2), COSTM(20,30,2),CSTOV(30,2)
                     1            ,PSIB(30)
   ISN 0015           COMMON /OVER/ TOV(30,2), SNOV(30,2), THOV(30,2)
   ISN 0016           COMMON / POV/ SNOVP(20,2), THOVP(20,2), CSTOVP(20,2), PP(20,2)
                     1            , RLP(20,2)
   ISN 0017           COMMON /SUMARY/ SECTLE(2,10,8),SYSTLE(60,8),NSECT(8),DELC(10,8),
                     1                COSR(10,8),DELCPW(10,8),COSRPW(10,8),DELCUA(10,8),
                     2                COSRUA(10,8),RLRAT(10,8),TLM(10,8),DSLV(10,8),NSYS
   ISN 0018           COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0019           COMMON /TITLE/ TITLE(20,3), SECTTL(20)
   ISN 0020           COMMON /CMP/ COMP(30,34), PCOMP(30), AATP(30)
   ISN 0021           COMMON /SLVG/ ISLV, FLRP, VI(30), RI(30), VL(30), RL(30),
                     1              U(30), PL(30), MI(30), P(20), VP(20), RP(20),
                     2              PB, VPB, RPB, NS, NY, SV(6,2), SVB, FLRPTP(4)
   ISN 0022           DIMENSION RESULT(2000,2),TABLE(8,11,50),IHEAD(5,5),IDUM(5),TX(10)
   ISN 0023           DIMENSION RESM(2000,2),RESR(2000,2),TMAN(8,11,50),TRH(8,11,50)
   ISN 0024           DIMENSION IWORD(2), TOT(30) ,TXM(50)
   ISN 0025           DATA IDUM/4H  PR, 4HESEN ,4HT  P, 4HROPO, 4HSED /
   ISN 0026           DATA LS/0/
   ISN 0027           DATA MAXLN /10/
   ISN 0028           DATA IWORD(1), IWORD(2) /4HSN  , 4HD   /
   ISN 0029           DATA KSEC/0/
   ISN 0030           IF (LOCSW .LT. 0  .OR. LOCSW .GT. 4) GO TO 9991
   ISN 0032           LOC1 = LOCSW + 1
   ISN 0033           GO TO (900, 1000, 2000, 3000, 2100), LOC1
   ISN 0034       900 K = 1
   ISN 0035       905 CALL NPAGE
   ISN 0036           SUMTLM = 0.
   ISN 0037           SUMDC = 0.
   ISN 0038           SUMCPW = 0.
   ISN 0039           SUMCUA = 0.
   ISN 0040           SUMSV = 0.
   ISN 0041           WRITE (LO,920) (SYSTLE(I,K), I=1,60)
   ISN 0042       920 FORMAT(5X,20A4)
   ISN 0043           WRITE (LO,9000)
   ISN 0044      9000 FORMAT(/)
   ISN 0045           WRITE (LO,940)
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ISN 0046       940 FORMAT(3X,2(2X,7HSECTION),4X,4HLANE,8X,12HUNDISCOUNTED,7X,
                   1        13HPRESENT WORTH,3X,19HUNIFORM ANNUAL COST,3X,
                   2        23HRATIO OF REMAINING LIFE/
                   3     5X,6HNUMBER,2X,10HIDENTIFIER,2X,5HMILES,3X,5HDELTA,6H  COST
                   4       ,4X,5HDELTA,3X,5HDELTA,3X,4HCOST,6X,5HDELTA,5X,4HCOST,9X,
                   5        16HPROPOSED/PRESENT/
                   6     33X,4HCOST,3X,5HRATIO,2X,13HSALVAGE  COST,4X,5HRATIO,5X,
                   7        4HCOST,6X,5HRATIO/
                   8     48X,5HVALUE/)
ISN 0047           NS = NSECT(K)
ISN 0048           DO 960 J=1,NS
ISN 0049           SUMTLM = SUMTLM + TLM(J,K)
ISN 0050           SUMDC = SUMDC + DELC(J,K)
ISN 0051           SUMCPW = SUMCPW + DELCPW(J,K)
ISN 0052           SUMCUA = SUMCUA + DELCUA(J,K)
ISN 0053           SUMSV = SUMSV + DSLV(J,K)
ISN 0054           WRITE (LO,950) J, (SECTLE(I,J,K),I=1,2), TLM(J,K), DELC(J,K),
                   1            COSR(J,K), DSLV(J,K), DELCPW(J,K), COSRPW(J,K),
                   2            DELCUA(J,K), COSRUA(J,K), RLRAT(J,K)
ISN 0055       950 FORMAT(8X,I2,4X,2A4,F8.0,-6PF8.3,OPF6.2,-6PF10.3,-6PF8.3,OPF6.2,
                   1     -6PF11.3,OPF9.2,14X,F6.2)
ISN 0056       960 CONTINUE
ISN 0057           K = K+1
ISN 0058           WRITE (LO,970)
ISN 0059       970 FORMAT(///)
ISN 0060       980 WRITE (LO,990) SUMTLM, SUMDC, SUMSV, SUMCPW, SUMCUA
ISN 0061       990 FORMAT(/6X,5HTOTAL,10X,F9.0,-6PF8.3,-6PF16.3,-6PF8.3,-6PF17.3///
                   1     5X,36HALL COSTS ARE IN MILLIONS OF DOLLARS)
ISN 0062      9301 FORMAT(10X,20A4)
ISN 0063           IF(K.LE.NSYS)GO TO 905
ISN 0065      981  N2=NYAP*2
ISN 0066           DO 9310 K=1,NSYS
ISN 0067           NS=NSECT(K)
ISN 0068           DO 9310 J=1,NS
ISN 0069           DO 9310 I=2,N2,2
ISN 0070           LS=LS+1
ISN 0071           I1=I-1
ISN 0072           TMAN(K,J,I1)=RESM(LS,1)
ISN 0073           TMAN(K,J,I)=RESM(LS,2)
ISN 0074           TRH(K,J,I1)=RESR(LS,1)
ISN 0075           TRH(K,J,I)=RESR(LS,2)
ISN 0076           TABLE(K,J,I1)=RESULT(LS,1)
ISN 0077      9310 TABLE(K,J,I)=RESULT(LS,2)
ISN 0078           DO 9315 K=1,NSYS
ISN 0079           NS=NSECT(K)
ISN 0080           DO 9316 J=1,50
ISN 0081           TMAN(K,11,I)=0.0
ISN 0082           TRH(K,11,I)=0.0
ISN 0083      9316 TABLE(K,11,J)=0.0
ISN 0084           DO 9315 J=1,NS
ISN 0085           DO 9315 I=1,N2
ISN 0086           TMAN(K,11,I)=TMAN(K,11,I)+TMAN(K,J,I)
ISN 0087           TRH(K,11,I)=TRH(K,11,I)+TRH(K,J,I)
ISN 0088      9315 TABLE(K,11,I)=TABLE(K,11,I)+TABLE(K,J,I)
ISN 0089           DO 9311 K=1,5
ISN 0090           DO 9311 J=1,5
ISN 0091      9311 IHEAD(K,J)=IDUM(K)
ISN 0092           DO 19400 K=1,NSYS
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ISN 0093              NS=NSECT(K)
ISN 0094              IFRST=1
ISN 0095        19401 IF(IFRST.EQ.1) GO TO 19411
ISN 0097              IF(IFRST.EQ.11) GO TO 19411
ISN 0099              GO TO 19402
ISN 0100        19411 CONTINUE
ISN 0101              CALL NPAGE
ISN 0102              WRITE(LO,19403)(SYSTLE(I,K),I=1,60)
ISN 0103        19403 FORMAT(//10X,14HSUMMARY REPORT  ,//,10X,3(5X,20A4/)//,
                     1 /10X,15HMAINTENANCE            ,/
                     1 10X,36HALL COSTS ARE IN MILLIONS OF DOLLARS  //)
ISN 0104        19402 LAST=IFRST+4
ISN 0105              IF(LAST.GT.NYAP) LAST=NYAP
ISN 0107              LX=LAST-IFRST+1
ISN 0108              IL=LAST*2
ISN 0109              IR=(IFRST-1)*2 +1
ISN 0110              WRITE(LO,9405)(I,I=IFRST,LAST)
ISN 0111              WRITE(LO,9412)((IHEAD(I,J),I=1,5),J=1,LX)
ISN 0112              TX(K)=0.
ISN 0113              DO 19407 J=1,NS
ISN 0114              TX(K)=TX(K)+TLM(J,K)
ISN 0115        19407 WRITE(LO,9408)(SECTLE(I,J,K),I=1,2),TLM(J,K),(TMAN(K,J,I),
                     1 I=IR,IL)
ISN 0116              WRITE(LO,9410) TX(K),(TMAN(K,11,I),I=IR,IL)
ISN 0117              IF(LAST.EQ.NYAP) GO TO 19400
ISN 0119              IFRST=LAST+1
ISN 0120              GO TO 19401
ISN 0121        19400 CONTINUE
ISN 0122              IFRST=1
ISN 0123              CALL NPAGE
ISN 0124              WRITE(LO,19453)
ISN 0125              CALL SUM (TX,10,TLLM)
ISN 0126              CALL ZERO (TXM,50)
ISN 0127              DO 19478 K=1,NSYS
ISN 0128              DO 19478 J=1,50
ISN 0129        19478 TXM(J)=TXM(J)+TMAN(K,11,J)
ISN 0130        19453 FORMAT(/,10X,25HSUMMARY FOR ALL SYSTEMS     ,/
                     1 /10X, 15HMAINTENANCE            ,/
                     1 10X, 36HALL COSTS ARE IN MILLIONS OF DOLLARS  ,/)
ISN 0131        19452 LAST=IFRST+4
ISN 0132              IF(LAST.GT.NYAP)LAST=NYAP
ISN 0134              LX=LAST-IFRST+1
ISN 0135              IL=LAST*2
ISN 0136              IR=(IFRST-1)*2+1
ISN 0137              WRITE(LO,9405)(I,I=IFRST,LAST)
ISN 0138              WRITE(LO,9472)((IHEAD(I,J),I=1,5),J=1,LX)
ISN 0139              DO 19467 K=1,NSYS
ISN 0140        19467 WRITE(LO,9445) K,TX(K),(TMAN(K,11,I),I=IR,IL)
ISN 0141              WRITE(LO,9468) TLLM,(TXM(I),I=IR,IL)
ISN 0142              IFRST=LAST+1
ISN 0143              IF(LAST.LT.NYAP) GO TO 19452
ISN 0145              DO 29400 K=1,NSYS
ISN 0146              NS=NSECT(K)
ISN 0147              IFRST=1
ISN 0148        29401 IF(IFRST.EQ.1) GO TO 29411
ISN 0150              IF(IFRST.EQ.11) GO TO 29411
ISN 0152              GO TO 29402
ISN 0153        29411 CONTINUE
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ISN 0154              CALL NPAGE
ISN 0155              WRITE(LO,29403)(SYSTLE(I,K),I=1,60)
ISN 0156        29403 FORMAT(//10X,14HSUMMARY REPORT  ,//,10X,3(5X,20A4/)//,
                    1 /10X,15HREHABILITATION        ,/
                    1 10X,36HALL COSTS ARE IN MILLIONS OF DOLLARS  //)
ISN 0157        29402 LAST=IFRST+4
ISN 0158              IF(LAST.GT.NYAP) LAST=NYAP
ISN 0160              LX=LAST-IFRST+1
ISN 0161              IL=LAST*2
ISN 0162              IR=(IFRST-1)*2 +1
ISN 0163              WRITE(LO,9405)(I,I=IFRST,LAST)
ISN 0164              WRITE(LO,9412)((IHEAD(I,J),I=1,5),J=1,LX)
ISN 0165              TX(K)=0.
ISN 0166              DO 29407 J=1,NS
ISN 0167              TX(K)=TX(K)+TLM(J,K)
ISN 0168        29407 WRITE(LO,9408)(SECTLE(I,J,K),I=1,2),TLM(J,K),(TRH(K,J,I),
                    1 I=IR,IL)
ISN 0169              WRITE(LO,9410) TX(K),(TRH(K,11,I),I=IR,IL)
ISN 0170              IF(LAST.EQ.NYAP) GO TO 29400
ISN 0172              IFRST=LAST+1
ISN 0173              GO TO 29401
ISN 0174        29400 CONTINUE
ISN 0175              IFRST=1
ISN 0176              CALL NPAGE
ISN 0177              WRITE(LO,29453)
ISN 0178              CALL SUM (TX,10,TLLM)
ISN 0179              CALL ZERO (TXM,50)
ISN 0180              DO 29478 K=1,NSYS
ISN 0181              DO 29478 J=1,50
ISN 0182        29478 TXM(J)=TXM(J)+TRH(K,11,J)
ISN 0183        29453 FORMAT(/,10X,25HSUMMARY FOR ALL SYSTEMS    ./
                    1 /10X, 15HREHABILITATION        ,/
                    1 10X, 36HALL COSTS ARE IN MILLIONS OF DOLLARS  ,/)
ISN 0184        29452 LAST=IFRST+4
ISN 0185              IF(LAST.GT.NYAP)LAST=NYAP
ISN 0187              LX=LAST-IFRST+1
ISN 0188              IL=LAST*2
ISN 0189              IR=(IFRST-1)*2+1
ISN 0190              WRITE(LO,9405)(I,I=IFRST,LAST)
ISN 0191              WRITE(LO,9472)((IHEAD(I,J),I=1,5),J=1,LX)
ISN 0192              DO 29467 K=1,NSYS
ISN 0193        29467 WRITE(LO,9445) K,TX(K),(TRH(K,11,I),I=IR,IL)
ISN 0194              WRITE(LO,9468) TLLM,(TXM(I),I=IR,IL)
ISN 0195              IFRST=LAST+1
ISN 0196              IF(LAST.LT.NYAP) GO TO 29452
ISN 0198              DO 9400 K=1,NSYS
ISN 0199              NS=NSECT(K)
ISN 0200              IFRST=1
ISN 0201         9401 IF(IFRST.EQ.1) GO TO 9411
ISN 0203              IF(IFRST.EQ.11) GO TO 9411
ISN 0205              GO TO 9402
ISN 0206        9411  CONTINUE
ISN 0207              CALL NPAGE
ISN 0208              WRITE(LO,9403)(SYSTLE(I,K),I=1,60)
ISN 0209         9403 FORMAT(//10X,14HSUMMARY REPORT  ,//,10X,3(5X,20A4/)//,
                    1 10X,36HALL COSTS ARE IN MILLIONS OF DOLLARS  //)
ISN 0210         9402 LAST=IFRST+4
ISN 0211              IF(LAST.GT.NYAP) LAST=NYAP
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ISN 0213              LX=LAST-IFRST+1
ISN 0214              IL=LAST*2
ISN 0215              IR=(IFRST-1)*2 +1
ISN 0216              WRITE(LO,9405)(I,I=IFRST,LAST)
ISN 0217         9405 FORMAT(//30X,5(10X,I2,8X))
ISN 0218              WRITE(LO,9412)((IHEAD(I,J),I=1,5),J=1,LX)
ISN 0219        9412  FORMAT(//2X,7HSECTION  ,5X,13HTOTAL LNMILES ,5X,5(5A4))
ISN 0220              TX(K)=0.
ISN 0221              DO 9407 J=1,NS
ISN 0222              TX(K)=TX(K)+TLM(J,K)
ISN 0223         9407 WRITE(LO,9408)(SECTLE(I,J,K),I=1,2),TLM(J,K),(TABLE(K,J,I),
                     1 I=IR,IL)
ISN 0224         9408 FORMAT(1X,2A4,6X,F7.1,9X,10(-6PF10.3))
ISN 0225              WRITE(LO,9410) TX(K),(TABLE(K,11,I),I=IR,IL)
ISN 0226         9410 FORMAT(/,3X,5HTOTAL ,7X,F7.1,9X,10(-6PF10.3))
ISN 0227              IF(LAST.EQ.NYAP) GO TO 9400
ISN 0229              IFRST=LAST+1
ISN 0230              GO TO 9401
ISN 0231         9400 CONTINUE
ISN 0232              IFRST=1
ISN 0233              CALL NPAGE
ISN 0234              WRITE(LO,9453)
ISN 0235              CALL SUM (TX,10,TLLM)
ISN 0236              CALL ZERO (TXM,50)
ISN 0237              DO 9478 K=1,NSYS
ISN 0238              DO 9478 J=1,50
ISN 0239        9478  TXM(J)=TXM(J)+TABLE(K,11,J)
ISN 0240         9453 FORMAT(/,10X,25HSUMMARY FOR ALL SYSTEMS    ,/
                     1 10X, 36HALL COSTS ARE IN MILLIONS OF DOLLARS  ,/)
ISN 0241         9452 LAST=IFRST+4
ISN 0242              IF(LAST.GT.NYAP)LAST=NYAP
ISN 0244              LX=LAST-IFRST+1
ISN 0245              IL=LAST*2
ISN 0246              IR=(IFRST-1)*2+1
ISN 0247              WRITE(LO,9405)(I,I=IFRST,LAST)
ISN 0248              WRITE(LO,9472)((IHEAD(I,J),I=1,5),J=1,LX)
ISN 0249        9472  FORMAT(2X,7HSYSTEM   ,5X,13HTOTAL LNMILES ,5X,5(5A4))
ISN 0250              DO 9467 K=1,NSYS
ISN 0251         9467 WRITE(LO,9445) K,TX(K),(TABLE(K,11,I),I=IR,IL)
ISN 0252         9445 FORMAT(8X,I2,5X,F7.1,9X,10(-6PF10.3))
ISN 0253              WRITE(LO,9468) TLLM,(TXM(I),I=IR,IL)
ISN 0254         9468 FORMAT(/2X,5HTOTAL,6X,F9.1,9X,10(-6PF10.3))
ISN 0255              IFRST=LAST+1
ISN 0256              IF(LAST.LT.NYAP) GO TO 9452
ISN 0258              GO TO 9999
ISN 0259         1000 IF (IOUT .LT. 1) GO TO 9999
ISN 0261              CALL NPAGE
ISN 0262              PPFF = PPF * 100.
ISN 0263              WRITE (LO,1011)  PPFF
ISN 0264         1011 FORMAT(5X,36HPERCENT OF TOTAL LANE MILES IN POTTS/
                     9       9X,31H(BEGINNING OF ANALYSIS PERIOD) ,34(1H-),F10.2///
                     A       5X,47HLANE-MILES FROM GIVEN AGE SLICE DUE FOR TIMELY ,
                     B          30HOVERLAY IN GIVEN ANALYSIS YEAR/)
ISN 0265              LIM = MINO(NSLR,13)
ISN 0266              PTOT = 0.
ISN 0267              DO 1004 I=1,30
ISN 0268              TOT(I) = PCOMP(I)
ISN 0269              PTOT = PTOT + PCOMP(I)
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ISN 0270          DO 1007 J=1,NSLR
ISN 0271          TOT(I) = TOT(I) + COMP(I,J)
ISN 0272     1007 CONTINUE
ISN 0273     1004 CONTINUE
ISN 0274          WRITE (LO,1001) (I,I=1,LIM)
ISN 0275     1001 FORMAT(16X,8HPAVEMENT/
                1        17X,6HAGE AT,37X,13HANALYSIS YEAR/
                2        10X,4HLOSS,2X,9HBEGINNING,11X,4HINTO/
                3         2X,5HVALUE,3X,4HRATE,3X,7HOF A.P.,3X,5HTOTAL,4X,5HPOTTS,
                4         1X,12(I5,2X),I5)
ISN 0276          WRITE (LO,1009)
ISN 0277     1009 FORMAT (/)
ISN 0278          DO 1003 I=1,NASL
ISN 0279          WRITE (LO,1002) VI(I), RI(I), I, TOT(I), PCOMP(I),
                1                 (COMP(I,J),J=1,LIM)
ISN 0280     1002 FORMAT(1X,F7.0,F6.2,I7,F11.1,F8.1,1X,13(1X,F6.1))
ISN 0281     1003 CONTINUE
ISN 0282          WRITE (LO,1016) PTOT, (XLM(I),I=1,LIM)
ISN 0283     1016 FORMAT(/21X,6HTOTALS,4X,F9.1,1X,13(1X,F6.1))
ISN 0284          WRITE (LO,1014) (AATP(I),I=1,LIM)
ISN 0285     1014 FORMAT(/2X,27HAVERAGE AGE AT TERMINAL PSI,13X,13(F6.2,1X))
ISN 0286          WRITE (LO,1017)
ISN 0287     1017 FORMAT(/2X,29HVALUE IN THOUSANDS OF DOLLARS,
                1         9X,29HLOSS RATE IN PERCENT PER YEAR)
ISN 0288          IF (NSLR .LE. 13) GO TO 1018
ISN 0290          CALL NPAGE
ISN 0291          WRITE (LO,1008) (I,I=14,NSLR)
ISN 0292     1008 FORMAT(5X,47HLANE-MILES FROM GIVEN AGE SLICE DUE FOR TIMELY ,
                1           30HOVERLAY IN GIVEN ANALYSIS YEAR//
                2        1X,8HPAVEMENT/
                3        2X,6HAGE AT,12X,13HANALYSIS YEAR/
                4        1X,9HBEGINNING/
                5        2X,7HOF A.P.,1X,17(I5,2X))
ISN 0293          WRITE (LO,1009)
ISN 0294          DO 1006 I=1,NASL
ISN 0295          WRITE (LO,1005) I, (COMP(I,J),J=14,NSLR)
ISN 0296     1005 FORMAT(4X,I2,4X,17(F6.1,1X))
ISN 0297     1006 CONTINUE
ISN 0298          WRITE (LO,1012) (XLM(I),I=14,NSLR)
ISN 0299     1012 FORMAT(/2X,6HTOTALS,2X,17(F6.1,1X))
ISN 0300          WRITE (LO,1013) (AATP(I),I=14,NSLR)
ISN 0301     1013 FORMAT(/2X,27HAVERAGE AGE AT TERMINAL PSI/
                1        10X,17(F6.2,1X))
ISN 0302          WRITE (LO,1017)
ISN 0303     1018 L=2
ISN 0304          IF (IP .EQ. IF) L = 1
ISN 0306          CALL NPAGE
ISN 0307          WRITE (LO,2005) (SECTTL(I),I=1,20)
ISN 0308     2005 FORMAT(5X,20A4//)
ISN 0309          WRITE (LO,1010)
ISN 0310     1010 FORMAT(31X,34HP E R F O R M A N C E    T A B L E//)
ISN 0311          WRITE (LO,1015)
ISN 0312     1015 FORMAT(29X,38HP R E S E N T    R E G U L A T I O N S//)
ISN 0313          DO 1070 K=1,2
ISN 0314          IF(IP.EQ.IR) WRITE (LO,1020) IWORD(L)
ISN 0316     1020 FORMAT(72X,6HPSI AT/
                1         1X,2(4X,10HLANE MILES),3X,7HYEAR OF,4X,7HOVERLAY,5X,
                2           7HOVERLAY,5X,16HBEGINNING    END,7X,
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                    3            14HREMAINING LIFE,6X,12HOVERLAY COST/
                    4         5X,11HDUE OVERLAY,4X,8HOVERLAID,4X,7HOVERLAY,3X,7HDESIGN ,
                    5            A4,10H THICKNESS,3X,18HOF ANALYSIS PERIOD,3X,
                    6            20H(MILLION 18-KIP EAL),3X,13H($/LANE MILE)//)
ISN 0317               IF(IP.EQ.IF) WRITE (LO,1022)
ISN 0319          1022 FORMAT(60X,6HPSI AT/
                    1          1X,2(4X,10HLANE MILES),3X,7HYEAR OF,4X,7HOVERLAY,5X,
                    2            16HBEGINNING    END,7X,
                    3            14HREMAINING LIFE,6X,12HOVERLAY COST/
                    4         5X,11HDUE OVERLAY,4X,8HOVERLAID,4X,7HOVERLAY,3X,
                    5            10H THICKNESS,3X,18HOF ANALYSIS PERIOD,3X,
                    6            20H(MILLION 18-KIP EAL),3X,13H($/LANE MILE)//)
ISN 0320               DO 1040 J=1,NSLR
ISN 0321                XCOST=CSTOV(J,K)*(1+XHCIO)**FLOAT(J)
ISN 0322               IF(IP.EQ.IR)WRITE (LO,1030) XLM(J), TOVLM(J,K), TOV(J,K),
                      1SNOV(J,K),THOV(J,K) ,PSIB(J), PSIE(J,K), EALREM(J,K), XCOST
ISN 0324          1030 FORMAT(F12.1,F14.1,F12.2,F11.2,2F12.2,F10.2,7X,-6PF10.3,10X,
                    1         OPF11.0)
ISN 0325               IF(IP.EQ.IF)WRITE (LO,1031) XLM(J), TOVLM(J,K), TOV(J,K),
                      1THOV(J,K) ,PSIB(J), PSIE(J,K), EALREM(J,K), XCOST
ISN 0327          1031 FORMAT(F12.1,F14.1,F12.2,2F12.2,F10.2,7X,-6PF10.3,10X,
                    1         OPF11.0)
ISN 0328          1040 CONTINUE
ISN 0329               IF (K .EQ. 2) GO TO 1070
ISN 0331               IF (NYAP .LE. 15) GO TO 1060
ISN 0333               CALL NPAGE
ISN 0334               WRITE (LO,2005) (SECTTL(I),I=1,20)
ISN 0335               WRITE (LO,1010)
ISN 0336               WRITE (LO,1050)
ISN 0337          1050 FORMAT(/28X,40HP R O P O S E D    R E G U L A T I O N S//)
ISN 0338               GO TO 1070
ISN 0339          1060 WRITE (LO,1050)
ISN 0340          1070 CONTINUE
ISN 0341               CALL NPAGE
ISN 0342               WRITE (LO,2005) (SECTTL(I),I=1,20)
ISN 0343               WRITE (LO,1080)
ISN 0344          1080 FORMAT(36X,22HP O T T S    T A B L E//)
ISN 0345               WRITE (LO,1090)
ISN 0346          1090 FORMAT(28X,38HP R E S E N T    R E G U L A T I O N S//)
ISN 0347               DO 1150 K=1,2
ISN 0348               IF (IP.EQ.IR)WRITE (LO,1100) IWORD(L)
ISN 0350          1100 FORMAT(5X,8HANALYSIS,2(2X,10HLANE MILES),3X,7HOVERLAY,4X,7HOVERLAY
                    1            ,4X,13HPSI AT END OF,4X,12HOVERLAY COST/
                    2         7X,4HYEAR,5X,8HIN POTTS,4X,8HOVERLAID,3X,7HDESIGN ,A4,
                    3            9HTHICKNESS,2X,15HANALYSIS PERIOD,3X,13H($/LANE-MILE)/
                    4         27X,10HFROM POTTS//)
ISN 0351               IF (IP.EQ.IF)WRITE (LO,1101)
ISN 0353          1101 FORMAT(5X,8HANALYSIS,2(2X,10HLANE MILES),3X,7HOVERLAY
                    1            ,4X,13HPSI AT END OF,4X,12HOVERLAY COST/
                    2         7X,4HYEAR,5X,8HIN POTTS,4X,8HOVERLAID,3X,
                    3            9HTHICKNESS,2X,15HANALYSIS PERIOD,3X,13H($/LANE-MILE)/
                    4         27X,10HFROM POTTS//)
ISN 0354               DO 1120 J=1,NYAP
ISN 0355               XCOST=CSTOVP(J,K)*(1.0+XHCIO)**FLOAT(J)
ISN 0356               IF(IP.EQ.IR)WRITE (LO,1110) J, POTLM(J,K), OUTP(J,K),
                      1SNOVP(J,K),THOVP(J,K), PP(J,K), XCOST
ISN 0358          1110 FORMAT(8X,I2,2F12.1,2F11.2,F14.2,F18.0)
ISN 0359               IF(IP.EQ.IF)WRITE (LO,1111) J, POTLM(J,K), OUTP(J,K), THOVP(J,K),
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                    1                   PP(J,K), XCOST
  ISN 0361       1111 FORMAT(8X,I2,2F12.1,F11.2,F14.2,F18.0)
  ISN 0362       1120 CONTINUE
  ISN 0363            IF (K .EQ. 2) GO TO 1150
  ISN 0365            IF (NYAP .LE. 17) GO TO 1140
  ISN 0367            CALL NPAGE
  ISN 0368            WRITE (LO,2005) (SECTTL(I),I=1,20)
  ISN 0369            WRITE (LO,1080)
  ISN 0370            WRITE (LO,1130)
  ISN 0371       1130 FORMAT(/27X,40HP R O P O S E D    R E G U L A T I O N S//)
  ISN 0372            GO TO 1150
  ISN 0373       1140 WRITE (LO,1130)
  ISN 0374       1150 CONTINUE
  ISN 0375            GO TO 9999
  ISN 0376       2000 IF (IOUT .LT. 2) GO TO 9999
  ISN 0378            CALL NPAGE
  ISN 0379            WRITE (LO,2005) (SECTTL(I),I=1,20)
  ISN 0380            WRITE (LO,2010)
  ISN 0381       2010 FORMAT(5X,10HTRUCK TYPE,4X,17HPAYLOAD PER TRUCK,4X,12H18-KIP AXLES
                    1         ,10H PER TRUCK//
                    2        19X,7HPRESENT,2X,8HPROPOSED,6X,7HPRESENT,3X,8HPROPOSED//)
  ISN 0382            INTT = NTTY + NATT
  ISN 0383            DO 2030 I=1,INTT
  ISN 0384            WRITE (LO,2020) (TTYP(J,I),J=1,2), APPT(I,1), APPT(I,2),
                    1                 EALPT(I,1), EALPT(I,2)
  ISN 0385       2020 FORMAT(6X,2A4,5X,F7.2,2X,F7.2,6X,F7.2,3X,F7.2)
  ISN 0386       2030 CONTINUE
  ISN 0387            WRITE (LO,2040)
  ISN 0388       2040 FORMAT(/////7X,4HYEAR,3X,17H18-KIP ESAL RATIO,10X,4HYEAR,
                    1          3X,17H18-KIP ESAL RATIO/
                    2        14X,18H(PROPOSED/PRESENT),16X,18H(PROPOSED/PRESENT)//)
  ISN 0389            NLINES = MIN0(NYAP,MAXLN)
  ISN 0390            DO 2060 I=1,NLINES
  ISN 0391            WRITE (LO,2050) (J, EALFCT(J), J=I,NYAP,MAXLN)
  ISN 0392       2050 FORMAT(8X,I2,6X,F10.3,16X,I2,6X,F10.3)
  ISN 0393       2060 CONTINUE
  ISN 0394            GO TO 9999
  ISN 0395       2100 CONTINUE
  ISN 0396            CALL NPAGE
  ISN 0397            WRITE (LO,2005) (SECTTL(I),I=1,20)
  ISN 0398            WRITE (LO,2070)
  ISN 0399       2070 FORMAT(22X,36HU N D I S C O U N T E D    C O S T S//
                    1        30X,21H(MILLIONS OF DOLLARS)//
                    2         9X,7HYEAR IN,13X,11HMAINTENANCE,20X,7HOVERLAY/
                    3         5X,15HANALYSIS PERIOD,4X,7HPRESENT,6X,8HPROPOSED,9X,
                    4            7HPRESENT,5X,8HPROPOSED//)
  ISN 0400            TOTM1 = 0.
  ISN 0401            TOTM2 = 0.
  ISN 0402            TOTV1 = 0.
  ISN 0403            TOTV2 = 0.
  ISN 0404            DO 2090 I=1,NYAP
  ISN 0405            WRITE (LO,2080) I, (COSM(I,K),K=1,2), (COSV(I,K),K=1,2)
  ISN 0406       2080 FORMAT(12X,I2,6X,-6PF10.3,4X,-6PF10.3,6X,-6PF10.3,3X,-6PF10.3)
  ISN 0407            KSEC=KSEC+1
  ISN 0408            RESULT(KSEC,1)= COSM(I,1)+COSV(I,1)
  ISN 0409            RESULT(KSEC,2)= COSM(I,2)+COSV(I,2)
  ISN 0410            RESM(KSEC,1)=COSM(I,1)
  ISN 0411            RESM(KSEC,2)=COSM(I,2)
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ISN 0412            RESR(KSEC,1)=COSV(I,1)
ISN 0413            RESR(KSEC,2)=COSV(I,2)
ISN 0414            TOTM1 = TOTM1 + COSM(I,1)
ISN 0415            TOTM2 = TOTM2 + COSM(I,2)
ISN 0416            TOTV1 = TOTV1 + COSV(I,1)
ISN 0417            TOTV2 = TOTV2 + COSV(I,2)
ISN 0418       2090 CONTINUE
ISN 0419            WRITE (LO,2095) TOTM1, TOTM2, TOTV1, TOTV2
ISN 0420       2095 FORMAT(/10X,6HTOTALS,4X,-6PF10.3,4X,-6PF10.3,6X,-6PF10.3,3X,
                   1         -6PF10.3)
ISN 0421            XSLVG = SV(6,2) - SV(6,1)
ISN 0422            WRITE (LO,2096) SVB, SV(6,1), SVB, SV(6,2), XSLVG
ISN 0423       2096 FORMAT(////24X,26HS A L V A G E    V A L U E/
                   1         26X,21H(MILLIONS OF DOLLARS)//
                   2         29X,15HANALYSIS PERIOD/
                   3         25X,9HBEGINNING,9X,3HEND//
                   4         15X,7HPRESENT,-6PF12.3,4X,-6PF10.3/
                   5         15X,8HPROPOSED,-6PF11.3,4X,-6PF10.3//
                   6         31X,5HDELTA,-6PF12.3)
ISN 0424            GO TO 9999
ISN 0425       3000 IF (IOUT .LT. 3) GO TO 9999
ISN 0427            II = 1
ISN 0428            LIMIT = MINO(NGVW,40)
ISN 0429       3005 CALL NPAGE
ISN 0430            WRITE (LO,3010) (SECTTL(I),I=1,20)
ISN 0431       3010 FORMAT(5X,20A4//
                   1         5X,48HCUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP ,
                   2             25HINTERVALS) FOR EACH TRUCK//)
ISN 0432            WRITE (LO,3020) (TTYP(I,IT),I=1,2)
ISN 0433       3020 FORMAT(5X,11HTRUCK TYPE ,2A4///
                   1             10X,6HEND OF,6X,9HUNSHIFTED,3X,5HFINAL/
                   2             10X,6HWEIGHT,4X,6(3X,7HPERCENT)/
                   3              9X,8HINTERVAL,3X,2(3X,7HWEIGHED),3X,6HSINGLE,4X,
                   4                 6HTANDEM,4X,6HTRIDEM,4X,8HSTEERING/
                   5             10X,6H(KIPS),3X,2(5X,5HGROSS),4X,5HAXLES,3(5X,5HAXLES)
                   6                 //)
ISN 0434            DO 3040 I=II,LIMIT
ISN 0435            WRITE (LO,3030) ELVWI(I), APVWE(I), APVWG(I), SAAPV(I), TAAPV(I),
                   1                TRAPV(I), STAPV(I)
ISN 0436       3030 FORMAT(6X,F10.3,3X,6F10.2)
ISN 0437       3040 CONTINUE
ISN 0438            IF ((NGVW .LE. 40) .OR. (LIMIT .EQ. NGVW)) GO TO 9999
ISN 0440            II = 41
ISN 0441            LIMIT = NGVW
ISN 0442            GO TO 3005
ISN 0443       9991 WRITE (LO, 9091) LOCSW
ISN 0444       9091 FORMAT(/18H LOCATION SWITCH =,I3,16H IS OUT OF RANGE//)
ISN 0445       9999 RETURN
ISN 0446            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =     445, PROGRAM SIZE =    118476, SUBPROGRAM NAME =OUTPUT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                              24K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED           DATE 82.147/20.14.03       PAGE   1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            FUNCTION FWT18L (SN, SS, R, PI, PT)
                 C     AASHO-FLEXIBLE PREDICTION OF 18-KIP EAL TO TERMINAL PSI
   ISN 0003            GT = ALOG10((PI-PT)/(PI-PF))
   ISN 0004            GTERM = GT/(0.40+1094./(SN+1.)**5.19)
   ISN 0005            FWT18L= 9.36*ALOG10(SN+1.)-0.20+GTERM-ALOG10(R)+0.372*(SS-3.0)
   ISN 0006            RETURN
   ISN 0007            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       6, PROGRAM SIZE =      582, SUBPROGRAM NAME =FWT18L

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE GPSIF(EALBAP,PSB)
   ISN 0003          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                    *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0004          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0005          COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0006          COMMON /PSI/ PF,  PICON, PTERM, PIOV, PTOV
   ISN 0007          COMMON /MECH/XKT,NRU,NLH,ND,NDEL
   ISN 0008          IF(TPE.EQ.0) GO TO 1
   ISN 0010          CALL PSIT(P,PF,W,XKT)
   ISN 0011        1 QTEMP=-1.*XKT/EALBAP
   ISN 0012          IF(QTEMP.LT.-50.0) QTEMP=-50.0
   ISN 0014          Q=EXP(QTEMP)
   ISN 0015          PSB=PICON-(PICON-PF)*Q
   ISN 0016          RETURN
   ISN 0017          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*    SOURCE STATEMENTS =      16, PROGRAM SIZE =      440, SUBPROGRAM NAME = GPSIF

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                              136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.14.29        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE OVTHKF (XNOV, THOV,YR)
   ISN 0003            REAL*8 THICK1(5),DMDRU,DMDRE
   ISN 0004            COMMON /MECH/XKT,NRU,NLH,ND,NDEL
   ISN 0005            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0006            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0007            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0008            COMMON /PSI/PF,PICON, PTERM, PIOV, PTOV
   ISN 0009            COMMON /STRCOE/ STRCD(8),CC(4),MC(11),NC,STRC(5),RFS(4),RFB(4)
   ISN 0010            DIMENSION BETA(5,2,2),CO(5,2,2)
   ISN 0011            BETA(1,1,1)=-1.5287
   ISN 0012            BETA(1,1,2)=-1.5387
   ISN 0013            BETA(3,1,1)=-1.4370
   ISN 0014            BETA(3,1,2)=-1.4370
   ISN 0015            BETA(4,1,1)=-1.5605
   ISN 0016            BETA(4,1,2)=-1.5776
   ISN 0017            BETA(1,2,1)=-1.53
   ISN 0018            BETA(1,2,2)=-1.562
   ISN 0019            BETA(3,2,1)=-1.4649
   ISN 0020            BETA(3,2,2)=-1.4649
   ISN 0021            BETA(4,2,1)=-1.5700
   ISN 0022            BETA(4,2,2)=-1.6085
   ISN 0023            CO(3,1,1)=600.
   ISN 0024            CO(3,1,2)=600.
   ISN 0025            CO(1,1,1)=10000.0
   ISN 0026            CO(4,1,1)=10000.0
   ISN 0027            CO(1,1,2)=50000.0
   ISN 0028            CO(4,1,2)=50000.0
   ISN 0029            CO(3,2,1)=1000.
   ISN 0030            CO(3,2,2)=1000.0
   ISN 0031            CO(1,2,1)=10000.0
   ISN 0032            CO(4,2,1)=10000.0
   ISN 0033            CO(1,2,2)=100000.0
   ISN 0034            CO(4,2,2)=100000.0
   ISN 0035            NLAY1=NLAY+1
   ISN 0036            DO 10  K=2, NLAY1
   ISN 0037         10 THICK1(K)=THICK(K-1)
   ISN 0038            THICK1(1)=MNOVTK
   ISN 0039            IF (PF.GT.PTERM.OR.TPE.EQ.0) GO TO 100
   ISN 0041            TNPT=NPT
   ISN 0042            NPT=4
   ISN 0043            CALL PSIT (P,PFO,W,XKTO)
   ISN 0044            NPT=TNPT
   ISN 0045            IF (PFO.GE.PTOV) GOTO 3
   ISN 0047            GO TO 8
   ISN 0048        100 IF (PFO.GE.PTOV) GOTO 3
   ISN 0050            IF(PFO.EQ.PTERM) PTERM=PTERM+0.05
   ISN 0052            XKTO=-.8*XNOV*ALOG((PIOV-PTERM)/(PIOV-PFO))
   ISN 0053        8   DMDRE=(100.0+XKTO/CO(NPT,NRU,NLH))**(BETA(NPT,NRU,NLH))
   ISN 0054            N=(MXOVTK-MNOVTK)*4
   ISN 0055            DO 1 I=1,N
   ISN 0056            CALL RUSIAN  (THICK1,DMDRU,NLAY1,NPT,NRU,NLH)
   ISN 0057            IF(DMDRU.LE.DMDRE)GO TO 2
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   ISN 0059          1 THICK1(1)=THICK1(1)+.25
   ISN 0060          2 THOV=THICK1(1)
   ISN 0061            GO TO 4
   ISN 0062          3 THOV=MNOVTK
   ISN 0063          4 RETURN
   ISN 0064            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       63, PROGRAM SIZE =      1700, SUBPROGRAM NAME =OVTHKF

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        128K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                      OS/360  FORTRAN H EXTENDED            DATE 82.147/20.14.33        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            RETURN
   ISN 0003            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       2, PROGRAM SIZE =       166, SUBPROGRAM NAME =  MAIN

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    136K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                              OS/360  FORTRAN H EXTENDED             DATE 82.147/20.14.45         PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               FUNCTION RWT18L(D,PI,PT)
                 C        AASHO-RIGID PREDICTION OF 18 KIP EAL TO TERMINAL PSI
   ISN 0003               GT = ALOG10((PI-PT)/(PI-1.5))
   ISN 0004               GTERM = GT/(1.+1.624E7/(D+1.)**8.46)
   ISN 0005               RWT18L= 7.35*ALOG10(D+1.)-0.06+GTERM
   ISN 0006               RETURN
   ISN 0007               END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*      SOURCE STATEMENTS =        6, PROGRAM SIZE =       480, SUBPROGRAM NAME =RWT18L

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.14.53        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002           FUNCTION RNAASH(DA)
                C     MODIFY AASHO-RIGID PREDICTION FOR NON-AASHO CONDITIONS
   ISN 0003           COMMON /STRUC/ SN,SS,R,D,AGG,XJ,XK,E
   ISN 0004           Z = E/XK
   ISN 0005           CT = 223.3
   ISN 0006           IKK = AGG
   ISN 0007           IF( IKK .EQ. 0 ) CT=204.16
   ISN 0009           D75 = DA**.75
   ISN 0010           RNAASH = ALOG10((CT/215.63)*(D75-1.132)/
                     1 (D75-18.42/Z**0.25))
   ISN 0011           RETURN
   ISN 0012           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       11, PROGRAM SIZE =       478, SUBPROGRAM NAME =RNAASH

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            FUNCTION GPSIR (XN, PI, D)
                 C     AASHO-RIGID PREDICTION OF PSI AFTER GIVEN 18 KIP EAL
   ISN 0003            DATA MAX, TEST /10, .001 /
   ISN 0004            EXP10(X) = EXP(2.302585*X)
   ISN 0005            PTN = 3.
   ISN 0006            ITER = 0
   ISN 0007            RN = RNAASH(D)
   ISN 0008            XNL = ALOG10(XN)
   ISN 0009            DT1 = 7.35*ALOG10(D+1.) - 0.06
   ISN 0010            DT2 = 1. + 1.624E7/(D+1.)**8.46
   ISN 0011         10 ITER = ITER + 1
   ISN 0012            IF (ITER .GT. MAX) GO TO 30
   ISN 0014            PT = PTN
   ISN 0015            GT = (XNL - DT1 - (4.22 - 0.32*PT)*RN)*DT2
   ISN 0016            PTN = PI - (PI - 1.5)*EXP10(GT)
   ISN 0017            IF (ABS(PTN - PT) .LT. TEST) GO TO 20
   ISN 0019            GO TO 10
   ISN 0020         20 GPSIR = PTN
   ISN 0021            RETURN
   ISN 0022         30 GPSIR = PTN
   ISN 0023            WRITE (6,1) MAX, PTN, PT, XN
   ISN 0024          1 FORMAT (1X, 37HFUNCTION GPSIR DID NOT CONVERGE AFTER, I5,
                     1        11H ITERATIONS / 1X,33HLAST AND PREVIOUS PSI VALUES WERE,
                     2        2F10.6 / 1X,  3HFOR , F10.0,26H 18KIP EAL TO DATE. ABORT.)
   ISN 0025            STOP
   ISN 0026            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       25, PROGRAM SIZE =       944, SUBPROGRAM NAME = GPSIR

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          132K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE GETD (W18, PI, PT, DB, DF)
                 C     AASHO-RIGID SLAB THICKNESS FOR GIVEN LIFE (18 KIP EAL) AND INITIAL
                 C     AND TERMINAL PSI
   ISN 0003            DATA MAX, TEST /10, .001 /
   ISN 0004            EXP10(X) = EXP(2.302585*X)
   ISN 0005            ITER = 0
   ISN 0006            DN = DB
   ISN 0007         10 ITER = ITER + 1
   ISN 0008            IF (ITER .GT. MAX) GO TO 99
   ISN 0010            D = DN
   ISN 0011            W = RWT18L(D,PI,PT) + (4.22-.32*PT)*RNAASH(D)
   ISN 0012            DTERM = 7.35*ALOG10(D + 1.)
   ISN 0013            D1NLOG = (W18 - (W - DTERM))/7.35
   ISN 0014            DN = EXP10(D1NLOG) - 1.
   ISN 0015            IF (ABS(D-DN) .LT. TEST) GO TO 20
   ISN 0017            GO TO 10
   ISN 0018         20 DF = DN
   ISN 0019            RETURN
   ISN 0020         99 DF = D
   ISN 0021            WRITE (6,1) D, DN, W18, PI,PT,DB
   ISN 0022            RETURN
   ISN 0023          1 FORMAT (1X, 27HTOO MANY ITERATIONS IN GETD /
                    1          1X, 20HLAST TWO VALUES WERE , 2F8.4 /
                    2          1X, 36HINPUT  LOG N18, PI, PT, STARTING D =  /
                    3          1X, 4F10.4 /)
   ISN 0024            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      23, PROGRAM SIZE =      870, SUBPROGRAM NAME =  GETD

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                 132K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE OVTHKR (D, EXD, TH)
                  C     OBTAIN THICKNESS OF AC OVERLAY TO BRING EQUIVALENT SLAB
                  C     THICKNESS, D, OF COMBINATION UP TO NEW DESIGN VALUE.
                  C     (EXISTING D DISCOUNTED FOR USE)
   ISN 0003             COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0004             COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
   ISN 0005             COMMON /STRCOE/ STRCD(8),CC(4),MC(11),NC,STRC(5),RFS(4),RFB(4)
   ISN 0006             DATA F/1./
   ISN 0007             INDX = 7.5 - 2.*PTERM
   ISN 0008             INDX = MINO(4,MAXO(1,INDX))
   ISN 0009             C = CC(INDX)
   ISN 0010             TH = 2.5*(F*D - C*EXD)
   ISN 0011             RETURN
   ISN 0012             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       11, PROGRAM SIZE =       424, SUBPROGRAM NAME =OVTHKR

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          132K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002          SUBROUTINE MNTSET
              C
              C     SET UP THE CUMULATIVE MAINTENANCE COST ARRAYS FOR MODEL OR
              C     HISTORICAL MAINTENANCE
              C
              C     INPUTS ARE
              C       1. UNTCST(7) ---- UNIT COST OF MAINTENANCE
              C            (1) - $/SQ.YD. OF FLEXIBLE PATCHING
              C            (2) - $/LINEAL FT. OF BITUMINOUS CRACK SEALING
              C            (3) - $/CU.YD. OF BITUMINOUS BASE AND SURFACE REPAIR
              C            (4) - $/SQ.YD. OF CONCRETE PATCHING
              C            (5) - $/AVERAGE CONCRETE BLOWUP
              C            (6) - $/AVERAGE CONCRETE MUDJACK
              C            (7) - $/LINEAL FT. OF CONCRETE JOINT SEALING
              C       2. USRMDL(31,2) - USER INPUT COST OF MAINTENANCE PER YEAR FOR
              C                         31 YEARS
              C            COLUMN 1 - FOR FLEXIBLE PAVEMENTS
              C            COLUMN 2 - FOR RIGID PAVEMENTS
              C       3. WDTH  - LANE WIDTH IN FEET
              C       4. S ----- JOINT SPACING IN FEET
              C       5. XML --- FRACTION OF JOINTS SEALED EACH YEAR
              C       6. JSLAG - TIME BEFORE FIRST JOINT SEAL IN YEARS
              C       7. MFLG -- MAINTENANCE TYPE
              C            0 = NO MAINTENANCE
              C            1 = EAROMAR MODEL
              C            2 = USER INPUT MODEL
              C
              C     OUTPUT IS
              C       ACCMDL(31,3) - EAROMAR MODEL COST OF MAINTENANCE PER YEAR FOR
              C                      31 YEARS (CUMULATIVE) FOR
              C          COLUMN 1 - FLEXIBLE PAVEMENTS
              C          COLUMN 2 - RIGID PAVEMENTS
              C          COLUMN 3 - COMPOSITE PAVEMENTS
              C
  ISN 0003          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
  ISN 0004          COMMON /MNTPAR/ UNTCST(4),USRMDL(31,3),WDTH,S,DISS,DCON,DIN,MFLG
  ISN 0005          COMMON /MODELS/ ACCMDL(31,3)
  ISN 0006          COMMON /IO/ LI, LO, LD
  ISN 0007          COMMON /TEMPC/ CONTP(25),DISTCT
  ISN 0008          COMMON /STRUC/ SN, SS, R, D, AGG, XJ, XK, E
  ISN 0009          DIMENSION XO(3),FO(3)
  ISN 0010          DATA LEN /24/
  ISN 0011          DATA MAX /31/
              C
              C     TEST FOR USER OVERRIDE OF EAROMAR MODELS
              C
  ISN 0012          IF (MFLG .EQ. 0) GO TO 9999
  ISN 0014          IF (MFLG .EQ. 1) GO TO 8
              C
              C     ACCUMULATE THE USER DEFINED COSTS PER YEAR.
              C
  ISN 0016          ACCMDL(1,1) = USRMDL(1,1)
  ISN 0017          ACCMDL(1,2) = USRMDL(1,2)
```

```
ISN 0018            DO 5 I=2,LEN
ISN 0019            DO 1 J=1,2
ISN 0020            K = I-1
ISN 0021            ACCMDL(I,J) = ACCMDL(K,J) + USRMDL(I,J)
ISN 0022          1 CONTINUE
ISN 0023          5 CONTINUE
ISN 0024            DO 7 I=25,MAX
ISN 0025            DO 6 J=1,2
ISN 0026            ACCMDL(I,J) = ACCMDL(I-1,J) + USRMDL(LEN,J)
ISN 0027          6 CONTINUE
ISN 0028          7 CONTINUE
ISN 0029            DO 10 I=1,MAX
ISN 0030            ACCMDL(I,3) = ACCMDL(I,1)
ISN 0031         10 CONTINUE
ISN 0032            GO TO 9999
              C
              C     FLEXIBLE PAVEMENT - CALCULATE YEARLY MAINTENANCE COSTS (20 YEARS)
              C
ISN 0033          8 CONTINUE
ISN 0034            X1 = DCON
ISN 0035            X3 = DISS
ISN 0036            X2 = DIN
ISN 0037            JT = DISTCT
ISN 0038            X4 = CONTP(JT)
ISN 0039            X5 = 0.0
ISN 0040            IF ( AGG .EQ. 0. ) X5 = -5.840 + 1.1856*X2
ISN 0042            XO(1) = 0.0
ISN 0043            XO(2) = X1
ISN 0044            XO(3) = X2
ISN 0045            FO(1) = 0.0
ISN 0046            FO(2) = DISS
ISN 0047            IDIN = INT(X2 + 0.5)
ISN 0048            DO 40 I = 1, LEN
ISN 0049            A = I
ISN 0050            X2 = A
ISN 0051            FACT1 = 1. + EXP(-1. * (A - 10.) / 1.16)
              C
              C     SY OF PATCHING
ISN 0052            SUM = 1100. / FACT1 * UNTCST(1)
              C
              C     CRACK SEALING
ISN 0053            SUM = SUM + 1000. / FACT1 * UNTCST(2)
ISN 0054            USRMDL(I,3) = SUM
ISN 0055            IF (NIS.EQ.2) USRMDL(I,3)=USRMDL(I,3)*0.382
ISN 0057            IF (NIS.EQ.3) USRMDL(I,3)=USRMDL(I,3)*0.316
              C
              C     BASE AND SURFACE REPAIR
ISN 0059            USRMDL(I,1) = SUM + 5. / FACT1 * UNTCST(3)
ISN 0060            IF (NIS.EQ.2) USRMDL(I,1)=USRMDL(I,1)*0.382
ISN 0062            IF (NIS.EQ.3) USRMDL(I,1)=USRMDL(I,1)*0.316
ISN 0064            IF(I.LT.IDIN) GO TO 40
              C
              C     RIGID PAVEMENT - CALCULATE YEARLY MAINTENANCE COSTS (25 YEARS)
              C
ISN 0066            FAIL = (-.381 - .4272*X1 + .018864*(X2**2) + .5532*X3*(X2-X1)
                   +  .0005928*X2*X4 +X5)
              C****  0.65  =  LANE DISTRIBUTION FACTOR ******
ISN 0067            SUM = FAIL * UNTCST(4) * 0.65
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```
ISN 0068            IF(I .EQ. IDIN) FO(3) = FAIL
ISN 0070            USRMDL(I,2) = SUM
ISN 0071            X2 = X2 + 1.0
ISN 0072         40 CONTINUE
ISN 0073            ILOOP=IDIN-1
ISN 0074            DO 900 I=1,ILOOP
ISN 0075            XIN = I
ISN 0076            CALL INTERP(XO,FO,3,XIN,FROUT)
ISN 0077            USRMDL(I,2) = FROUT * UNTCST(4)
ISN 0078        900 CONTINUE
ISN 0079            KI = 1
ISN 0080            DO 905 J=16,LEN
              C****  0.75 = REDUCTION FACTOR OF NO. OF FAILURES
ISN 0081            USRMDL(J,2) = 0.75*0.65* USRMDL(KI,2)
ISN 0082            KI = KI+1
ISN 0083        905 CONTINUE
              C
              C     SET THE COSTS OF YEARS 25-MAX EQUAL TO THE COST OF YEAR LEN
              C
ISN 0084            DO 46 I=25,MAX
ISN 0085            DO 43 J=1,3
ISN 0086            USRMDL(I,J) = USRMDL(I-1,J)
ISN 0087         43 CONTINUE
ISN 0088         46 CONTINUE
              C
              C     CALCULATE THE ACCUMULATED COSTS ARRAY
              C
ISN 0089            ACCMDL(1,1) = USRMDL(1,1)
ISN 0090            ACCMDL(1,2) = USRMDL(1,2)
ISN 0091            ACCMDL(1,3) = USRMDL(1,3)
ISN 0092            DO 60 I=2,MAX
ISN 0093            DO 55 J=1,3
ISN 0094            ACCMDL(I,J) = USRMDL(I,J)
ISN 0095         55 CONTINUE
ISN 0096         60 CONTINUE
ISN 0097       9999 RETURN
ISN 0098            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      97, PROGRAM SIZE =      2544, SUBPROGRAM NAME =MNTSET

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   120K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE MAINT (AGEI, AGE, TOV, YMCOST)
                   C
                   C     CALCULATE MAINTENANCE COSTS PER YEAR FOR EACH YEAR IN THE A. P.
                   C
                   C     THE INPUTS ARE
   ISN 0003              COMMON /OVRLAY/ XHCIO,XHCIM,WLANE, WPSH, WGSH, PPVDSH, CAC, CGR
                   C       1. AGEI ------- PAVEMENT AGE AT BEGINNING OF ANALYSIS PERIOD
                   C       2. AGE(20) ---- PAVEMENT AGE FOR EACH YEAR OF THE A. P.
                   C       3. TOV -------- TIME OF OVERLAY
                   C
                   C     THE OUTPUT IS
                   C       YMCOST(20) - COST OF MAINTENANCE PER YEAR FOR EACH YEAR OF THE
                   C                    ANALYSIS PERIOD
                   C
   ISN 0004              COMMON /MISC/ IPOT, IARMS, OLDMNT, AGF
   ISN 0005              COMMON /TIME/ ATP, OVLIF, NYAP, NYR,  YR(40)
   ISN 0006              COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0007              DIMENSION AGE(20) , YMCOST(20)
                   C
                   C     INITIALIZE THE YEARLY MAINTENANCE COSTS ARRAY
                   C
   ISN 0008              DO 10 I=1,20
   ISN 0009              YMCOST(I) = 0.
   ISN 0010           10 CONTINUE
                   C
                   C  PAVEMENT AGE AT TIME OF OVERLAY
                   C
   ISN 0011              PAV = ATP
   ISN 0012              IF (IARMS .EQ. 0) PAV = AGEI + TOV
                   C
                   C     DETERMINE THE OVERLAY YEAR, ITOV, THE PAVEMENT TYPE, NP, AND
                   C     THE CUMULATIVE COST AT THE BEGINNING OF THE ANALYSIS PERIOD
                   C
   ISN 0014              ITOV = INT(TOV-1.E-5)
   ISN 0015              NP = IP
   ISN 0016              CALL MCOSTS (AGEI, NP, COSTZ)
                   C
                   C     CALCULATE THE MAINTENANCE COST FOR EACH YEAR IN THE A. P.
                   C
   ISN 0017              DO 50 I=1,NYAP
                   C  TEST FOR FIRST YEAR OF THE ANALYSIS PERIOD
   ISN 0018              IF (I .GT. 1) GO TO 30
                   C  TEST FOR OVERLAY IN FIRST YEAR OF THE ANALYSIS PERIOD
   ISN 0020              IF (ITOV .EQ. 0) GO TO 20
                   C
                   C     YEAR 1 OF ANALYSIS PERIOD --- NO OVERLAY
                   C
   ISN 0022              CALL MCOSTS (AGE(1), NP, SVCOST)
   ISN 0023              YMCOST(1) = SVCOST - COSTZ
   ISN 0024              IF( YMCOST(1) .LT. 0.0 ) YMCOST(1) = SVCOST
   ISN 0026              GO TO 50
                   C
                   C     OVERLAY IN FIRST YEAR OF ANALYSIS PERIOD
```

```
                     C
    ISN 0027            20 CALL MCOSTS (PAV, NP, COST)
                     C  TEST FOR UNACCELERATED MAINTENANCE
    ISN 0028               IF (IARMS .EQ. 0) GO TO 25
    ISN 0030               COST = COST - COSTZ
    ISN 0031               IF (AGE(1) .LE. 1.) GO TO 23
    ISN 0033               YMCOST(1) = COST
    ISN 0034               SVCOST = 0.
                     C  IF RIGID PAVEMENT OVERLAID, CHANGE PAVEMENT TYPE TO COMPOSITE
    ISN 0035               IF (IP .EQ. IR) NP = IC
    ISN 0037               GO TO 50
    ISN 0038            23 IF (IP .EQ. IR) NP = IC
    ISN 0040               CALL MCOSTS (AGE(1), NP, SVCOST)
    ISN 0041               YMCOST(1) = COST * (1. - AGE(1)) + SVCOST
    ISN 0042               GO TO 50
                     C  UNACCELERATED MAINTENANCE - OVERLAY IN YEAR 1 OF ANALYSIS PERIOD
    ISN 0043            25 IF (AGE(1) .LE. 1.) GO TO 27
    ISN 0045               YMCOST(1) = COST - COSTZ
    ISN 0046               IF ( YMCOST(1) .LT. 0.0 ) YMCOST(1) = COST
    ISN 0048               SVCOST = 0.
    ISN 0049               IF (IP .EQ. IR) NP = IC
    ISN 0051               GO TO 50
    ISN 0052            27 AG = AGEI + (1. - AGE(1))
    ISN 0053               CALL MCOSTS (AG, NP, COST)
    ISN 0054               IF (IP .EQ. IR) NP = IC
    ISN 0056               CALL MCOSTS (AGE(1), NP, SVCOST)
    ISN 0057               YMCOST(1) = COST - COSTZ + SVCOST
    ISN 0058               IF ( YMCOST(1) .LT. 0.0 ) YMCOST(1) = COST + SVCOST
    ISN 0060               GO TO 50
                     C  TEST FOR OVERLAY YEAR
    ISN 0061            30 IF (I .EQ. ITOV+1) GO TO 40
                     C
                     C     YEAR I OF ANALYSIS PERIOD --- NO OVERLAY
                     C
    ISN 0063               CALL MCOSTS (AGE(I), NP, COST)
    ISN 0064               YMCOST(I) = COST - SVCOST
    ISN 0065               SVCOST = COST
    ISN 0066               IF ( YMCOST(I) .LT. 0.0 ) YMCOST(I) = COST
    ISN 0068               GO TO 50
                     C
                     C     OVERLAY IN YEAR I OF ANALYSIS PERIOD
                     C
                     C  TEST FOR UNACCELERATED MAINTENANCE
    ISN 0069            40 IF (IARMS .EQ. 0) GO TO 45
    ISN 0071               IF (AGE(I) .LE. 1.) GO TO 43
    ISN 0073               CALL MCOSTS (AGE(I), NP, COST)
    ISN 0074               YMCOST(I) = COST - SVCOST
    ISN 0075               IF ( YMCOST(I) .LT. 0.0 ) YMCOST(I) = COST
    ISN 0077               SVCOST = 0.
                     C  IF RIGID PAVEMENT OVERLAID, CHANGE PAVEMENT TYPE TO COMPOSITE
    ISN 0078               IF (IP .EQ. IR) NP = IC
    ISN 0080               GO TO 50
    ISN 0081            43 CALL MCOSTS (PAV, NP, COST)
    ISN 0082               COST = COST - SVCOST
    ISN 0083               IF(COST.LT.0.0) COST=0.0
    ISN 0085               IF (IP .EQ. IR) NP = IC
    ISN 0087               CALL MCOSTS (AGE(I), NP, SVCOST)
    ISN 0088               YMCOST(I) = COST + SVCOST
```

```
  ISN 0089            GO TO 50
                C  UNACCELERATED MAINTENANCE - OVERLAY IN YEAR I OF ANALYSIS PERIOD
  ISN 0090         45 IF (AGE(I) .LE. 1.) GO TO 47
  ISN 0092            CALL MCOSTS (AGE(I), NP, COST)
  ISN 0093            YMCOST(I) = COST - SVCOST
  ISN 0094            IF ( YMCOST(I) .LT. 0.0 ) YMCOST(I) = COST
  ISN 0096            SVCOST = 0.
  ISN 0097            IF (IP .EQ. IR) NP = IC
  ISN 0099            GO TO 50
  ISN 0100         47 AG = AGE(I-1) + (1. - AGE(I))
  ISN 0101            CALL MCOSTS (AG, NP, COST)
  ISN 0102            COST = COST - SVCOST
  ISN 0103            IF (IP .EQ. IR) NP = IC
  ISN 0105            CALL MCOSTS (AGE(I), NP, SVCOST)
  ISN 0106            YMCOST(I) = COST + SVCOST
  ISN 0107        50  CONTINUE
  ISN 0108            RETURN
  ISN 0109            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      108, PROGRAM SIZE =      2214, SUBPROGRAM NAME = MAINT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    124K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED           DATE 82.147/20.15.33        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE MCOSTS (A, NP, COST)
                C
                C        THIS ROUTINE CALCULATES THE MAINTENANCE COSTS FOR EACH YEAR OF THE
                C        ANALYSIS PERIOD
                C
                C        THE INPUTS ARE THE FOLLOWING
                C          1. A ------ PAVEMENT AGE FOR THE CURRENT YEAR
                C          2. NP ----- PAVEMENT TYPE INDICATOR FOR ARRAY ACCMDL WHERE,
                C                           NP=1 - FLEXIBLE
                C                              2 - RIGID
                C                              3 - COMPOSITE
                C
                C        THE OUTPUT IS
                C           COST - THE CALCULATED CUMULATIVE COST TO THE GIVEN PAVEMENT AGE
                C
   ISN 0003              COMMON /MODELS/ ACCMDL(31,3)
   ISN 0004              IF (A .GT. 1.) GO TO 10
   ISN 0006              COST = ACCMDL(1,NP) * A
   ISN 0007              GO TO 20
   ISN 0008           10 I1 = INT(A)
   ISN 0009              I2 = I1 + 1
   ISN 0010              AG = A - AINT(A)
   ISN 0011              COST = ACCMDL(I1,NP) + (ACCMDL(I2,NP) - ACCMDL(I1,NP)) * AG
   ISN 0012           20 RETURN
   ISN 0013              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       12, PROGRAM SIZE =       532, SUBPROGRAM NAME =MCOSTS

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               SUBROUTINE TRAFIC
                  C
                  C       THIS ROUTINE COMPUTES THE FOLLOWING
                  C          1. THE ADJUSTED AVERAGE EMPTY WEIGHT OF VEHICLES WEIGHED EMPTY
                  C          2. ADJUSTED GROSS WEIGHT AND TOTAL PAYLOAD CARRIED - PRESENT
                  C             AND PROPOSED REGULATIONS
                  C          3. DISTRIBUTION OF AXLE WEIGHTS - PRESENT AND PROPOSED REGS.
                  C          4. AXLE WEIGHT DISTRIBUTIONS BY VEHICLE CLASSIFICATION -
                  C             PROPOSED REGULATIONS
                  C
                  C       THE INPUTS ARE
                  C         1. NAXLES(10,4) - THE NUMBER OF SINGLE, TANDEM, TRIPLE AND
                  C                           STEERING AXLES FOR EACH TRUCK TYPE
                  C         2. NTTY - NUMBER OF TRUCK TYPES TO BE CONSIDERED (EXISTING)
                  C         3. NATT - NUMBER OF ADDED TRUCK TYPES (FUTURE DESIGN)
                  C         4. NEWTRK - SHIFTING INDICATOR
                  C              O - SHIFTING PROCEDURE TO BE DONE
                  C              1 - SHIFTING PROCEDURE NOT TO BE DONE (ALREADY DONE)
                  C         5. SA(30,11) - NUMBER OF SINGLE AXLES WEIGHED BY INTERVAL AND
                  C                        TRUCK TYPE
                  C         6. TA(30,11) - NUMBER OF TANDEM AXLES WEIGHED BY INTERVAL AND
                  C                        TRUCK TYPE
                  C         7. TR(50,11) - NUMBER OF TRIPLE AXLES WEIGHED BY INTERVAL AND
                  C                        TRUCK TYPE
                  C         8. ST(30,11) - NUMBER OF STEERING AXLES WEIGHED BY INTERVAL AND
                  C                        TRUCK TYPE
                  C         9. VE(30,11) - NUMBER OF VEHICLES WEIGHED EMPTY BY INTERVAL AND
                  C                        TRUCK TYPE
                  C        10. VG(75,11) - NUMBER OF VEHICLES WEIGHED GROSS BY INTERVAL AND
                  C                        TRUCK TYPE
                  C        11. NLDI(6) - NUMBER OF INTERVALS INPUT FOR EACH OF THE ABOVE SIX
                  C                      ARRAYS, WHERE,
                  C                         1 = SA   2 = TA  3 = TR  4 = VG  5 = VE  6 = ST
                  C        12. EMPTY(10) - PERCENT INCREASE IN AVERAGE EMPTY WEIGHT FOR EACH
                  C                        TRUCK TYPE
                  C        13. PGVWL - PRESENT GROSS VEHICLE WEIGHT LIMIT
                  C        14. PSAL -- PRESENT SINGLE AXLE WEIGHT LIMIT
                  C        15. PTAL -- PRESENT TANDEM AXLE WEIGHT LIMIT
                  C        16. PTRAL - PRESENT TRIPLE AXLE WEIGHT LIMIT
                  C        17. PSTAW(10) - PRESENT STEERING AXLE WEIGHT LIMIT BY TRUCK TYPE
                  C        18-22.
                  C            FGVWL, FSAL, FTAL, FTRAL, FSTAW(10) - SAME AS 13 THROUGH 17
                  C                  EXCEPT THAT THESE ARE VALUES UNDER PROPOSED REGULATIONS
                  C        23. SIZE - STANDARD INTERVAL SIZE (2-KIPS)
                  C        24. AVRG - AVERAGE VARIABLE (AVRG = 100. GIVES AVERAGE VALUES
                  C                                    PER 100 TRUCKS)
                  C        25. NAPOV - NUMBER OF SELECTED CUMULATIVE PERCENTAGES FOR THE
                  C                    DISTRIBUTION OF AXLE WEIGHTS - PROPOSED REGS. SECTION
                  C        26. PAPOV - PERCENTAGE INCREMENT CORRESPONDING TO NAPOV ABOVE
                  C
   ISN 0003               COMMON /TRFFIC/ ELVWI(75), APVWE(75), APVWG(75), SAAPV(75),
                         1                TAAPV(75), TRAPV(75), STAPV(75), NGVW
   ISN 0004               COMMON /EXPVT/NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
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ISN 0005          COMMON /TRTYP/ TTYP(2,10), PTTYP(10,20,2), PCTTR(20,2), PERCT(4),
                 1              NAXLES(10,4),NT(4), NTTY, NATT, NTT, NEWTRK
ISN 0006          COMMON /NMBR/ SA(30,11), TA(30,11), TR(50,11), VE(30,11),
                 1             VG(75,11), NLDI(6), EMPTY(10), ST(30,11)
ISN 0007          COMMON /LDS/ PGVWL, PSAL, PTAL, PTRAL, FGVWL, FSAL, FTAL, FTRAL,
                 1            PSTAW(10), FSTAW(10)
ISN 0008          COMMON /CNSTS/ NAPOV, PAPOV, SIZE, AVRG
ISN 0009          COMMON /TRINDX/ ITT
ISN 0010          COMMON /IO/ LI, LO, LD
ISN 0011          COMMON /OUTPTS/ TD4(10,6,2)
ISN 0012          COMMON EVWI(75), EVWMP(75), ELVWMP(75), GLVWNI(75), VWE(75),
                 2          PVWE(75), TWFAV(75), TPFAV(75), TVWE(75),
                 3          APPV(75), PPV(75), FACT(75), SAI(75), TAI(75), TRI(75),
                 4          SAA(75), TAA(75), TRA(75), SLA(75), TLA(75),
                 5          TRLA(75), APSA(75), APTA(75), APTR(75), APOV(75),
                 6          GWA(75), GWAF(75), SLAR(75), TLAR(75), TRLAR(75),
                 7          SANOV(75), TANOV(75), TRNOV(75), PSA(75), PTA(75),
                 8          PTR(75), SLAT(75), TLAT(75), TRLAT(75), STA(75),
                 9          PST(75), STLA(75), STLAR(75), STLAT(75), APST(75),
                 A          STI(75), STNOV(75), NLDISV(6)
ISN 0013          IF (NEWTRK .EQ. 1) GO TO 9999
ISN 0015          DO 6 K=1,2
ISN 0016          DO 4 J=1,6
ISN 0017          DO 2 I=1,10
ISN 0018          TD4(I,J,K) = 0.0
ISN 0019        2 CONTINUE
ISN 0020        4 CONTINUE
ISN 0021        6 CONTINUE
ISN 0022          DO 7 I=1,6
ISN 0023          NLDISV(I) = NLDI(I)
ISN 0024        7 CONTINUE
ISN 0025          DO 160 IT=1,NTT
ISN 0026          PERC =PERCT(IT)
ISN 0027          ITT = IT
ISN 0028          VTN = 0.
ISN 0029          NSA = 0
ISN 0030          NTA = 0
ISN 0031          NTR = 0
ISN 0032          NNA = 0
ISN 0033          NNT = 0
ISN 0034          NNR = 0
ISN 0035          APV = 0.
ISN 0036          PAPV = 0.
ISN 0037          DO 8 I=1,75
ISN 0038          PSA(I) = 0.
ISN 0039          PTA(I) = 0.
ISN 0040          PTR(I) = 0.
ISN 0041          PST(I) = 0.
ISN 0042          SAI(I) = 0.
ISN 0043          TAI(I) = 0.
ISN 0044          TRI(I) = 0.
ISN 0045          STI(I) = 0.
ISN 0046          SANOV(I) = 0.
ISN 0047          TANOV(I) = 0.
ISN 0048          TRNOV(I) = 0.
ISN 0049          STNOV(I) = 0.
ISN 0050          ELVWI(I) = 0.
ISN 0051          APVWE(I) = 0.
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      ISN 0052            APVWG(I) = 0.
      ISN 0053            SAAPV(I) = 0.
      ISN 0054            TAAPV(I) = 0.
      ISN 0055            TRAPV(I) = 0.
      ISN 0056            STAPV(I) = 0.
      ISN 0057            FACT(I) = 0.
      ISN 0058            GLVWNI(I) = 0.
      ISN 0059            APSA(I) = 0.
      ISN 0060            APTA(I) = 0.
      ISN 0061            APTR(I) = 0.
      ISN 0062            APST(I) = 0.
      ISN 0063          8 CONTINUE
      ISN 0064            DO 9 I=1,6
      ISN 0065            NLDI(I) = NLDISV(I)
      ISN 0066          9 CONTINUE
                    C
                    C     *** ADJUSTED AVERAGE EMPTY WEIGHT SECTION ***
                    C
      ISN 0067            CALL INTVL (VE, EVWI, NLDI(5), NI, 5, 30, VWE, IT)
                    C
                    C     CALCULATE THE NUMBER OF EMPTY VEHICLES WEIGHED IN EACH 2-KIP GROSS
                    C     EMPTY WEIGHT INTERVAL
                    C
      ISN 0068            CALL PCTAGE (VWE, NI, PVWE)
      ISN 0069            CALL ACMLTE (PVWE, NI, APVWE)
      ISN 0070            CALL MIDPNT (EVWI, NI, EVWMP)
      ISN 0071            CALL MULT (PVWE, EVWMP, NI, TWFAV)
      ISN 0072            CALL AVRGE (TWFAV, NI, AVRG, AEW)
                    C
                    C     COMPUTE THE PRACTICAL MAXIMUM GROSS VEHICLE WEIGHT FOR PRESENT AND
                    C     PROPOSED LIMITS AND MAKE SURE THAT THE VEHICLE GROSS INTERVALS
                    C     INPUT HAS A MAXIMUM END-OF-INTERVAL VALUE GREATER THAN OR EQUAL TO
                    C     THE CALCULATED PMGW.
                    C
      ISN 0073            K = 1
      ISN 0074            TD4(IT,6,K) = AEW
      ISN 0075            TD4(IT,1,K) = PSTAW(IT)
      ISN 0076            TD4(IT,2,K) = PSAL
      ISN 0077            TD4(IT,3,K) = PTAL
      ISN 0078            TD4(IT,4,K) = PTRAL
      ISN 0079            TD4(IT,5,K) = PSTAW(IT) + PSAL*FLOAT(NAXLES(IT,1)) + PTAL *
                         1              FLOAT(NAXLES(IT,2)) + PTRAL*FLOAT(NAXLES(IT,3))
      ISN 0080            NLD = NLDI(4)
      ISN 0081         11 IF (TD4(IT,5,1) .LE. VG(NLD,11)) GO TO 15
      ISN 0083            NLD = NLD + 1
      ISN 0084            VG(NLD,11) = VG(NLD-1,11) + SIZE
      ISN 0085            DO 12 ID=1,NTT
      ISN 0086            VG(NLD,ID) = 0.
      ISN 0087         12 CONTINUE
      ISN 0088            GO TO 11
      ISN 0089         15 NLDI(4) = NLD
      ISN 0090            K = K+1
      ISN 0091            TD4(IT,6,K) = AEW + (EMPTY(IT) * 0.01 * AEW)
      ISN 0092            TD4(IT,1,K) = FSTAW(IT)
      ISN 0093            TD4(IT,2,K) = FSAL
      ISN 0094            TD4(IT,3,K) = FTAL
      ISN 0095            TD4(IT,4,K) = FTRAL
                    C
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               C      *** ADJUSTED GROSS WEIGHT AND TOTAL PAYLOAD CARRIED - PRESENT REGS
               C
  ISN 0096            TD4(IT,5,K) = FSTAW(IT) + FSAL*FLOAT(NAXLES(IT,1)) + FTAL *
                    1              FLOAT(NAXLES(IT,2)) + FTRAL*FLOAT(NAXLES(IT,3))
  ISN 0097            NLDS = NLDI(4)
  ISN 0098            CALL COUNT (VG(1,IT), NLDS)
  ISN 0099            CALL INTVL (VG, ELVWI, NLDS, NJ, 4, 75, TVWE, IT)
  ISN 0100            ELOAD = ELVWI(NJ)
  ISN 0101            CALL PCTAGE (TVWE, NJ, PVWE)
  ISN 0102            CALL ACMLTE (PVWE, NJ, APVWE)
  ISN 0103            DO 888 JU=1,50
  ISN 0104        888 CONTINUE
  ISN 0105            IF (IT .GT. NTTY) GO TO 50
  ISN 0107            CALL MIDPNT (ELVWI, NJ, ELVWMP)
  ISN 0108            DO 10 I=1,NJ
  ISN 0109            APPV(I) = ELVWMP(I) - AEW
  ISN 0110         10 CONTINUE
  ISN 0111            CALL MULT (PVWE, APPV, NJ, TPFAV)
  ISN 0112            CALL AVRGE (TPFAV, NJ, AVRG, APV)
               C
               C      *** ADJUSTED GROSS WEIGHT AND TOTAL PAYLOAD CARRIED - PROPOSED REG
               C
               C      COMPUTE THE PROPOSED/PRESENT RATIO OF THE PMGW*S
               C
  ISN 0113            DO 200 J=1,75
  ISN 0114            IF(APVWE(J) .GT. PERC) GO TO 202
  ISN 0116            IF(APVWE(J) .LT. PERC) INN = J
  ISN 0118        200 CONTINUE
  ISN 0119        202 CONTINUE
  ISN 0120            ESTART = ELVWI(INN)
  ISN 0121            RATIO = TD4(IT,5,2) / TD4(IT,5,1)
  ISN 0122            SMALL = AMIN1(TD4(IT,5,1),ELOAD)
  ISN 0123            NK = INT(SMALL) - INT(ELVWI(1) + 0.5) + 1
  ISN 0124            XNK = FLOAT(NK) / 2.0 + 0.5
  ISN 0125            NK = INT(XNK)
  ISN 0126            NK2 = INT(SMALL) - INT(ESTART + 0.5) + 1
  ISN 0127            XNK2 = FLOAT(NK2)/2.0 + 0.5
  ISN 0128            NK2 = INT(XNK2)
  ISN 0129            NDIF = NK - NK2
  ISN 0130            DO 210 L=1,NDIF
  ISN 0131            FACT(L) = 1.0
  ISN 0132        210 CONTINUE
               C
               C      FOR ALL INTERVALS GREATER THAN THE PRESENT PMGW VALUE, RECORD THE
               C      VALUE OF THE RATIO OF THE PMGW*S IN *FACT*
               C
  ISN 0133            DIST = (RATIO - 1.0) / FLOAT(NK2)
  ISN 0134            NDDD = NDIF + 1
  ISN 0135            NDIFF = NDDD + 1
  ISN 0136            FACT(NDDD) = 1.0 + DIST
  ISN 0137            DO 20 J=NDIFF,NK
  ISN 0138            I = J-1
  ISN 0139            FACT(J) = FACT(I) + DIST
  ISN 0140         20 CONTINUE
  ISN 0141            DO 667 K2=1,NK
  ISN 0142        667 CONTINUE
  ISN 0143            IF (NJ .LE. NK) GO TO 35
  ISN 0145            J = NK+1
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ISN 0146              DO 30 I=J,NJ
ISN 0147              FACT(I) = RATIO
ISN 0148           30 CONTINUE
ISN 0149              NK = NJ
                C
                C     COMPUTE THE END OF INTERVAL WEIGHT FOR THE PROPOSED REGULATIONS,
                C     AND EXTEND THE 2-KIP INTERVAL ARRAY *ELVWI* TO THE MAXIMUM END OF
                C     INTERVAL WEIGHT COMPUTED
                C
ISN 0150           35 CALL MULT (ELVWI, FACT, NJ, GLVWNI)
ISN 0151              ELI = GLVWNI(NJ)
ISN 0152              I = NJ
ISN 0153           40 NJ = NJ+1
ISN 0154              ELVWI(NJ) = ELVWI(I) + SIZE
ISN 0155              I = I+1
ISN 0156              IF (ELVWI(I) .LT. ELI) GO TO 40
ISN 0158              CALL ITRP (GLVWNI, APVWE, ELVWI, 1, NJ, NK, APVWG, 0)
ISN 0159              PVWE(1) = APVWG(1)
ISN 0160              CALL DIFF (APVWG, NJ, PVWE)
ISN 0161           50 CALL MIDPNT (ELVWI, NJ, ELVWMP)
ISN 0162              DO 60 I=1,NJ
ISN 0163              PPV(I) = ELVWMP(I) - TD4(IT,6,2)
ISN 0164           60 CONTINUE
ISN 0165              CALL MULT (PVWE, PPV, NJ, TPFAV)
ISN 0166              CALL AVRGE (TPFAV, NJ, AVRG, PAPV)
                C
                C     *** NUMBER OF VEHICLES REQUIRED TO CARRY TOTAL PAYLOAD (CARGO) -
                C         PROPOSED LIMITS ***
                C
ISN 0167              VTN = APV / PAPV * 100.
                C
                C     *** DISTRIBUTION OF AXLE WEIGHTS - PRESENT LIMITS ***
                C
ISN 0168              IF (NAXLES(IT,1) .EQ. 0) GO TO 64
                C
                C     SINGLE AXLES
                C
ISN 0170              NLDS = NLDI(1)
ISN 0171              CALL COUNT (SA(1,IT), NLDS)
ISN 0172              CALL INTVL (SA, SAI, NLDS, NSA, 1, 30, SAA, IT)
ISN 0173              CALL PCTAGE (SAA, NSA, PSA)
ISN 0174              CALL ACMLTE (PSA, NSA, APSA)
ISN 0175              NNA = NSA
ISN 0176           64 IF (NAXLES(IT,2) .EQ. 0) GO TO 66
                C
                C     TANDEM AXLES
                C
ISN 0178              NLDS = NLDI(2)
ISN 0179              CALL COUNT (TA(1,IT), NLDS)
ISN 0180              CALL INTVL (TA, TAI, NLDS, NTA, 2, 30, TAA, IT)
ISN 0181              CALL PCTAGE (TAA, NTA, PTA)
ISN 0182              CALL ACMLTE (PTA, NTA, APTA)
ISN 0183              NNT = NTA
ISN 0184           66 IF (NAXLES(IT,3) .EQ. 0) GO TO 68
                C
                C     TRIPLE AXLES
                C
ISN 0186              NLDS = NLDI(3)
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ISN 0187             CALL COUNT (TR(1,IT), NLDS)
ISN 0188             CALL INTVL (TR, TRI, NLDS, NTR, 3, 50, TRA, IT)
ISN 0189             CALL PCTAGE (TRA, NTR, PTR)
ISN 0190             CALL ACMLTE (PTR, NTR, APTR)
ISN 0191             NNR = NTR
ISN 0192          68 IF ((NAXLES(IT,4) .EQ. O) .OR. (IP .NE. IF)) GO TO 69
               C
               C     STEERING AXLES
               C
ISN 0194             NLDS = NLDI(6)
ISN 0195             CALL COUNT (ST(1,IT), NLDS)
ISN 0196             CALL INTVL (ST, STI, NLDS, NST, 6, 30, STA, IT)
ISN 0197             CALL PCTAGE (STA, NST, PST)
ISN 0198             CALL ACMLTE (PST, NST, APST)
ISN 0199             NNS = NST
ISN 0200          69 IF (IT .GT. NTTY) GO TO 146
ISN 0202             NGVW = NJ
               C
               C     *** DISTRIBUTION OF SINGLE/TANDEM/TRIDEM AXLE WEIGHTS - PROPOSED LIMITS **
               C
               C     SET UP THE TABLE OF SELECTED CUMULATIVE PERCENTAGES DEFINING THE
               C     GROSS WEIGHT AND AXLE WEIGHT CURVES
               C
ISN 0203             P = 0.0
ISN 0204             DO 70 I=1,NAPOV
ISN 0205             APOV(I) = P
ISN 0206             P = P + PAPOV
ISN 0207          70 CONTINUE
               C
               C     FOR THE GROSS WEIGHT PRESENT AND PROPOSED, AND FOR THE AXLE
               C     WEIGHTS, FIND, BY INTERPOLATION, THE WEIGHTS CORRESPONDING TO THE
               C     PERCENTAGES IN ARRAY *APOV*. COMPUTE THE RATIOS OF THE AXLE
               C     WEIGHTS TO THE GROSS WEIGHTS IN *GWA* AND FINALLY, COMPUTE THE
               C     AXLE WEIGHT DISTRIBUTIONS FOR THE PROPOSED REGS. USING *GWAF*.
               C
ISN 0208             GWA(1) = ELVWI(1) - SIZE
ISN 0209             IF (GWA(1) .LT. 0.0) GWA(1) = 0.0
ISN 0211             CALL ITRP (APVWE, ELVWI,  APOV, 2, NAPOV, NK, GWA, O)
ISN 0212             GWAF(1) = ELVWI(1) - SIZE
ISN 0213             IF (GWAF(1) .LT. 0.0) GWAF(1) = 0.0
ISN 0215             CALL ITRP (APVWG, ELVWI,  APOV, 2, NAPOV, NJ, GWAF, O)
ISN 0216             IF (NAXLES(IT,1) .EQ. O) GO TO 72
ISN 0218             SLA(1) = SAI(1) - SIZE
ISN 0219             IF (SLA(1) .LT. 0.0) SLA(1) = 0.0
ISN 0221             CALL ITRP (APSA, SAI, APOV, 2, NAPOV, NSA, SLA, O)
ISN 0222             DO 80 I=1,NAPOV
ISN 0223             IF (GWA(I) .EQ. 0.0) GO TO 79
ISN 0225             SLAR(I) = SLA(I) / GWA(I)
ISN 0226             GO TO 80
ISN 0227          79 SLAR(I) = O.
ISN 0228          80 CONTINUE
ISN 0229             CALL MULT (SLAR, GWAF, NAPOV, SLAT)
ISN 0230          72 IF (NAXLES(IT,2) .EQ. O) GO TO 75
ISN 0232             TLA(1) = TAI(1) - SIZE
ISN 0233             IF (TLA(1) .LT. 0.0) TLA(1) = 0.0
ISN 0235             CALL ITRP (APTA, TAI, APOV, 2, NAPOV, NTA, TLA, O)
ISN 0236             DO 82 I=1,NAPOV
ISN 0237             IF (GWA(I) .EQ. 0.0) GO TO 81
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ISN 0239              TLAR(I) = TLA(I) / GWA(I)
ISN 0240              GO TO 82
ISN 0241           81 TLAR(I) = O.
ISN 0242           82 CONTINUE
ISN 0243              CALL MULT (TLAR, GWAF, NAPOV, TLAT)
ISN 0244           75 IF (NAXLES(IT,3) .EQ. O) GO TO 86
ISN 0246              TRLA(1) = TRI(1) - SIZE
ISN 0247              IF (TRLA(1) .LT. O.O) TRLA(1) = O.O
ISN 0249              CALL ITRP (APTR, TRI, APOV, 2, NAPOV, NTR, TRLA, O)
ISN 0250              DO 84 I=1,NAPOV
ISN 0251              IF (GWA(I) .EQ. O.O) GO TO 83
ISN 0253              TRLAR(I) = TRLA(I) / GWA(I)
ISN 0254              GO TO 84
ISN 0255           83 TRLAR(I) = O.
ISN 0256           84 CONTINUE
ISN 0257              CALL MULT (TRLAR, GWAF, NAPOV, TRLAT)
ISN 0258           86 IF ((NAXLES(IT,4) .EQ. O) .OR. (IP .NE. IF)) GO TO 88
ISN 0260              STLA(1) = STI(1) - SIZE
ISN 0261              IF (STLA(1) .LT. O.O) STLA(1) = O.O
ISN 0263              CALL ITRP (APST, STI, APOV, 2, NAPOV, NST, STLA, O)
ISN 0264              DO 87 I=1,NAPOV
ISN 0265              IF (GWA(I) .EQ. O.O) GO TO 85
ISN 0267              STLAR(I) = STLA(I) / GWA(I)
ISN 0268              GO TO 87
ISN 0269           85 STLAR(I) = O.
ISN 0270           87 CONTINUE
ISN 0271              CALL MULT (STLAR, GWAF, NAPOV, STLAT)
ISN 0272           88 CONTINUE
                C
                C     *** AXLE WEIGHT DISTRIBUTIONS BY VEHICLE CLASSIFICATION - PROPOSED
                C         LIMITS ***
                C
                C     DETERMINE THE PERCENTAGE OF EACH 2-KIP INTERVAL OF WEIGHT FOR THE
                C     PROPOSED DISTRIBUTION
                C
ISN 0273              IF (NAXLES(IT,1) .EQ. O) GO TO 105
                C
                C     SINGLE AXLES
                C
ISN 0275              IF (SLAT(NAPOV) .LE. SAI(NSA)) GO TO 100
ISN 0277              ELI = SLAT(NAPOV)
ISN 0278           90 I = NSA + 1
ISN 0279              SAI(I) = SAI(NSA) + SIZE
ISN 0280              NSA = I
ISN 0281              IF (SAI(I) .LT. ELI) GO TO 90
ISN 0283          100 CALL ITRP (SLAT, APOV, SAI, 1, NSA, NAPOV, SAAPV, O)
ISN 0284              CALL DIFF (SAAPV, NSA, SANOV)
ISN 0285          105 IF (NAXLES(IT,2) .EQ. O) GO TO 125
                C
                C     TANDEM AXLES
                C
ISN 0287              IF (TLAT(NAPOV) .LE. TAI(NTA)) GO TO 120
ISN 0289              ELI = TLAT(NAPOV)
ISN 0290          110 I = NTA + 1
ISN 0291              TAI(I) = TAI(NTA) + SIZE
ISN 0292              NTA = I
ISN 0293              IF (TAI(I) .LT. ELI) GO TO 110
ISN 0295          120 CALL ITRP (TLAT, APOV, TAI, 1, NTA, NAPOV, TAAPV, O)
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ISN 0296            CALL DIFF (TAAPV, NTA, TANOV)
ISN 0297        125 IF (NAXLES(IT,3) .EQ. 0) GO TO 145
              C
              C     TRIPLE AXLES
              C
ISN 0299            IF (TRLAT(NAPOV) .LE. TRI(NTR)) GO TO 140
ISN 0301            ELI = TRLAT(NAPOV)
ISN 0302        130 I = NTR + 1
ISN 0303            TRI(I) = TRI(NTR) + SIZE
ISN 0304            NTR = I
ISN 0305            IF (TRI(I) .LT. ELI) GO TO 130
ISN 0307        140 CALL ITRP (TRLAT, APOV, TRI, 1, NTR, NAPOV, TRAPV, 0)
ISN 0308            CALL DIFF (TRAPV, NTR, TRNOV)
ISN 0309        145 IF ((NAXLES(IT,4) .EQ. 0) .OR. (IP .NE. IF)) GO TO 170
              C
              C     STEERING AXLES
              C
ISN 0311            IF (STLAT(NAPOV) .LE. STI(NST)) GO TO 168
ISN 0313            ELI = STLAT(NAPOV)
ISN 0314        162 I = NST + 1
ISN 0315            STI(I) = STI(NST) + SIZE
ISN 0316            NST = I
ISN 0317            IF (STI(I) .LT. ELI) GO TO 162
ISN 0319        168 CALL ITRP (STLAT, APOV, STI, 1, NST, NAPOV, STAPV, 0)
ISN 0320            CALL DIFF (STAPV, NST, STNOV)
ISN 0321        170 CONTINUE
ISN 0322            GO TO 150
ISN 0323        146 DO 147 I=1,NSA
ISN 0324            SAAPV(I) = APSA(I)
ISN 0325            SANOV(I) = PSA(I)
ISN 0326            PSA(I) = 0.
ISN 0327        147 CONTINUE
ISN 0328            NNA = NSA
ISN 0329            DO 148 I=1,NTA
ISN 0330            TAAPV(I) = APTA(I)
ISN 0331            TANOV(I) = PTA(I)
ISN 0332            PTA(I) = 0.
ISN 0333        148 CONTINUE
ISN 0334            NNT = NTA
ISN 0335            DO 149 I=1,NTR
ISN 0336            TRAPV(I) = APTR(I)
ISN 0337            TRNOV(I) = PTR(I)
ISN 0338            PTR(I) = 0.
ISN 0339        149 CONTINUE
ISN 0340            NNR = NTR
ISN 0341            DO 151 I=1,NST
ISN 0342            STAPV(I) = APST(I)
ISN 0343            STNOV(I) = PST(I)
ISN 0344            PST(I) = 0.
ISN 0345        151 CONTINUE
ISN 0346            NNS = NST
ISN 0347            DO 152 I=1,NJ
ISN 0348            APVWG(I) = APVWE(I)
ISN 0349        152 CONTINUE
ISN 0350            NGVW = MAX0(NSA,NTA,NTR,NST,NJ)
              C
              C     WRITE TO DISK FOR RECALL IN EQUIVALENT LOAD APPLICATIONS ROUTINE
              C
```

```
ISN 0351       150 CALL OUTPUT (3)
ISN 0352           WRITE (LD) NSA, NTA, NTR, NST, NNA, NNT, NNR, NNS,
                 1          (PSA(I),I=1,NNA), (PTA(I),I=1,NNT), (PTR(I),I=1,NNR),
                 2          (PST(I),I=1,NNS), (SANOV(I),I=1,NSA),
                 3          (TANOV(I),I=1,NTA), (TRNOV(I),I=1,NTR),
                 4          (STNOV(I),I=1,NST), (SAI(I),I=1,NSA), (TAI(I),I=1,NTA),
                 5          (TRI(I),I=1,NTR), (STI(I),I=1,NST), VTN, APV, PAPV
ISN 0353       160 CONTINUE
ISN 0354      9999 RETURN
ISN 0355           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =     354, PROGRAM SIZE =     9414, SUBPROGRAM NAME =TRAFIC

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  72K BYTES OF CORE NOT USED
```

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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002            SUBROUTINE EAL18 (STRNUM, SLBTHK, TPSI, IPVT)
                C
                C     THIS ROUTINE CALCULATES THE EQUIVALENT 18-KIP AXLE LOAD
                C     APPLICATIONS FOR EACH VEHICLE USING INFORMATION WRITTEN ON DISK BY
                C     SUBROUTINE TRAFIC
                C
                C     THE INPUTS ARE
                C       1. STRNUM - STRUCTURAL NUMBER FOR A FLEXIBLE PAVEMENT
                C       2. SLBTHK - SLAB THICKNESS FOR A RIGID PAVEMENT
                C       3. TPSI --- TERMINAL PSI
                C       4. IPVT --- PAVEMENT TYPE SWITCH
                C       5. APPT(10,2) - AVERAGE PAYLOAD PER VEHICLE, PRESENT + PROPOSED
                C
                C     THE OUTPUT IS
                C       EALPT(10,2) - 18-KIP EAL PER TRUCK - PRESENT AND PROPOSED REGS.
                C
  ISN 0003            DIMENSION PSA(75), PTA(75), PTR(75), SANOV(75), TANOV(75),
                     1          TRNOV(75), EFSA(75), EFTA(75), EFTR(75), SAN18(75),
                     2          TAN18(75), TRN18(75), SPN18(75), DPN18(75), TPN18(75),
                     3          SAI(75), TAI(75), TRI(75), SAM(75), TAM(75), TRM(75),
                     4          PST(75), STNOV(75), EFST(75), STN18(75), STPN18(75),
                     5          STI(75), STM(75)
  ISN 0004            COMMON /EALPAY/ EALPT(10,2), APPT(10,2), EALFCT(20), IEQTRP
  ISN 0005            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
  ISN 0006            COMMON /CNSTS/ NAPOV, PAPOV, SIZE, AVRG
  ISN 0007            COMMON /TRTYP/ TTYP(2,10), PTTYP(10,20,2), PCTTR(20,2),PERCT(4),
                     1               NAXLES(10,4),NT(4), NTTY, NATT, NTT, NEWTRK
  ISN 0008            COMMON /IO/ LI, LO, LD
  ISN 0009            COMMON /PSI/ PF,PICON, PTERM, PIOV, PTOV
  ISN 0010            DATA PSI1, PK1, PSI2, PK2 /4.2, 2.7, 4.5, 3.0/
  ISN 0011            REWIND 1
  ISN 0012            NTT = NTTY + NATT
  ISN 0013            DO 1000 IT=1,NTT
                C
                C     READ FROM DISK THE INFORMATION STORED BY SUBROUTINE TRAFIC
                C
  ISN 0014            READ (LD) NSA, NTA, NTR, NST, NNA, NNT, NNR, NNS,
                     1          (PSA(I),I=1,NNA), (PTA(I),I=1,NNT), (PTR(I),I=1,NNR),
                     2          (PST(I),I=1,NNS), (SANOV(I),I=1,NSA),
                     3          (TANOV(I),I=1,NTA), (TRNOV(I),I=1,NTR),
                     4          (STNOV(I),I=1,NST), (SAI(I),I=1,NSA), (TAI(I),I=1,NTA),
                     5          (TRI(I),I=1,NTR), (STI(I),I=1,NST), VTN, APV, PAPV
  ISN 0015            APPT(IT,1) = APV
  ISN 0016            APPT(IT,2) = PAPV
                C
                C     COMPUTE THE 18-KIP EAL FOR EACH AXLE TYPE
                C
  ISN 0017            TSN18 = 0.
  ISN 0018            TXN18 = 0.
  ISN 0019            IF (NAXLES(IT,1) .EQ. 0) GO TO 50
                C
                C     SINGLE AXLES
                C
```

```
ISN 0021          CALL MIDPNT (SAI, NSA, SAM)
ISN 0022          IF (IPVT .EQ. 2) GO TO 10
ISN 0024          GT = ALOG10((PSI1 - TPSI) / PK1)
ISN 0025          CALL FLEXEQ (SAM, NSA, 1.0, STRNUM, GT, EFSA)
ISN 0026          GO TO 20
ISN 0027       10 GT = ALOG10((PSI2 - TPSI) / PK2)
ISN 0028          CALL RIGEQ (SAM, NSA, 1.0, SLBTHK, GT, EFSA)
ISN 0029       20 CALL MULT (EFSA, PSA, NNA, SAN18)
ISN 0030          CALL MULT (EFSA, SANOV, NSA, SPN18)
ISN 0031          CALL SUM (SAN18, NNA, TSN18)
ISN 0032          CALL SUM (SPN18, NSA, TXN18)
ISN 0033       50 CONTINUE
ISN 0034          TDN18 = 0.
ISN 0035          TYN18 = 0.
ISN 0036          IF (NAXLES(IT,2) .EQ. 0) GO TO 100
            C
            C     TANDEM AXLES
            C
ISN 0038          CALL MIDPNT (TAI, NTA, TAM)
ISN 0039          IF (IPVT .EQ. 2) GO TO 12
ISN 0041          GT = ALOG10((PSI1 - TPSI) / PK1)
ISN 0042          CALL FLEXEQ (TAM, NTA, 2.0, STRNUM, GT, EFTA)
ISN 0043          GO TO 22
ISN 0044       12 GT = ALOG10((PSI2 - TPSI) / PK2)
ISN 0045          CALL RIGEQ (TAM, NTA, 2.0, SLBTHK, GT, EFTA)
ISN 0046       22 CALL MULT (EFTA, PTA, NNT, TAN18)
ISN 0047          CALL MULT (EFTA, TANOV, NTA, DPN18)
ISN 0048          CALL SUM (TAN18, NNT, TDN18)
ISN 0049          CALL SUM (DPN18, NTA, TYN18)
ISN 0050      100 CONTINUE
ISN 0051          TTN18 = 0.
ISN 0052          TZN18 = 0.
ISN 0053          IF (NAXLES(IT,3) .EQ. 0) GO TO 150
            C
            C     TRIPLE AXLES
            C
ISN 0055          CALL MIDPNT (TRI, NTR, TRM)
ISN 0056          IF (IPVT .EQ. 2) GO TO 14
ISN 0058          GT = ALOG10((PSI1 - TPSI) / PK1)
ISN 0059          CALL FLEXEQ (TRM, NTR, 3.0, STRNUM, GT, EFTR)
ISN 0060          GO TO 24
ISN 0061       14 GT = ALOG10((PSI2 - TPSI) / PK2)
ISN 0062          CALL RIGEQ (TRM, NTR, 3.0, SLBTHK, GT, EFTR)
ISN 0063       24 CALL MULT (EFTR, PTR, NNR, TRN18)
ISN 0064          CALL MULT (EFTR, TRNOV, NTR, TPN18)
ISN 0065          CALL SUM (TRN18, NNR, TTN18)
ISN 0066          CALL SUM (TPN18, NTR, TZN18)
ISN 0067      150 CONTINUE
ISN 0068          TSTN18 = 0.
ISN 0069          TWN18 = 0.
ISN 0070          IF ((NAXLES(IT,4) .EQ. 0) .OR. (IP .NE. IF)) GO TO 200
            C
            C     STEERING AXLES
            C
ISN 0072          CALL MIDPNT (STI, NST, STM)
ISN 0073          IA = -1.5 + 2. * TPSI
ISN 0074          IF(IP. EQ. IF) IA = -1*PF + 2* TPSI
ISN 0076          IA = MAX0(1, MIN0(4,IA))
```

```
   ISN 0077            CALL STEREQ (IA, EFST, NST, STM)
   ISN 0078            CALL MULT (EFST, PST, NNS, STN18)
   ISN 0079            CALL MULT (EFST, STNOV, NST, STPN18)
   ISN 0080            CALL SUM (STN18, NNS, TSTN18)
   ISN 0081            CALL SUM (STPN18, NST, TWN18)
   ISN 0082        200 EALPT(IT,1) = (TSN18*FLOAT(NAXLES(IT,1)) + TDN18 *
                     1               FLOAT(NAXLES(IT,2)) + TTN18*FLOAT(NAXLES(IT,3)) +
                     2               TSTN18*FLOAT(NAXLES(IT,4))) * 0.01
   ISN 0083            EALPT(IT,2) = (TXN18*FLOAT(NAXLES(IT,1)) + TYN18 *
                     1               FLOAT(NAXLES(IT,2)) + TZN18*FLOAT(NAXLES(IT,3)) +
                     2               TWN18*FLOAT(NAXLES(IT,4))) * 0.01
   ISN 0084       1000 CONTINUE
   ISN 0085            RETURN
   ISN 0086            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      85, PROGRAM SIZE =     11450, SUBPROGRAM NAME = EAL18

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      116K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE RIGEQ (XL, NL, ST, D, GT, EQ)
   ISN 0003            DIMENSION XL(1), EQ(1)
   ISN 0004            D1 = D + 1.0
   ISN 0005            D1P = D1 ** 8.46
   ISN 0006            C = 3.28 * ALOG10(ST)
   ISN 0007            GTB18 = GT / (1.0 + 1.620E+7 / D1P)
   ISN 0008            STP = ST ** 3.52
   ISN 0009            CON = 5.908 + C - GTB18
   ISN 0010            DO 10 L=1,NL
   ISN 0011            B2 = 3.63 * (XL(L) + ST) ** 5.20
   ISN 0012            BX = 1.0 + B2 / (D1P * STP)
   ISN 0013            E = CON - 4.62 * ALOG10(XL(L) + ST) + GT / BX
   ISN 0014         10 EQ(L) = 10.0 ** (-E)
   ISN 0015            RETURN
   ISN 0016            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      15, PROGRAM SIZE =      836, SUBPROGRAM NAME = RIGEQ

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                136K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                          OS/360  FORTRAN H EXTENDED              DATE 82.147/20.15.54        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE FLEXEQ (XL, NL, ST, SN, GT, EQ)
   ISN 0003            DIMENSION XL(1), EQ(1)
   ISN 0004            SNP = (SN + 1.0) ** 5.19
   ISN 0005            GTB18 = GT / (0.40 + 1094.0 / SNP)
   ISN 0006            B1 = SNP * ST ** 3.23
   ISN 0007            CON = 6.125 + 4.33 * ALOG10(ST) - GTB18
   ISN 0008            DO 20 L=1,NL
   ISN 0009            B2 = 4.79 * ALOG10(XL(L) + ST)
   ISN 0010            BX = 0.40 + 0.081 * (XL(L) + ST) ** 3.23 / B1
   ISN 0011            E = CON - B2 + GT / BX
   ISN 0012         20 EQ(L) = 10.0 ** (-E)
   ISN 0013            RETURN
   ISN 0014            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       13, PROGRAM SIZE =       810, SUBPROGRAM NAME =FLEXEQ

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                            136K BYTES OF CORE NOT USED
```

```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE STEREQ (IEQ, SEQ, NEQ, EQM)
                  C
                  C     THIS ROUTINE COMPUTES STEERING AXLE EQUIVALENCY FACTORS
                  C
                  C     THE INPUTS ARE
                  C       1. EQM - ARRAY OF INTERVAL MIDPOINTS
                  C       2. NEQ - NUMBER OF MIDPOINTS IN EQM
                  C       3. IEQ - INDICATES WHICH COLUMN OF THE EQUIVALENCY FACTOR TABLE
                  C                (BY PSI) IS TO BE USED
                  C
                  C     THE OUTPUT IS
                  C       SEQ - ARRAY OF STEERING AXLE EQUIVALENCIES
                  C
   ISN 0003             DIMENSION SEQ(1), EQM(1)
   ISN 0004             COMMON /STEER/ EQFACT(15,5), PTST(4)
                  C
                  C     EQFACT(J,1) CONTAINS THE LOAD VALUES (J).
                  C     EQFACT(J,K) CONTAINS THE EQUIVALENCY FOR LOAD J, TERM PSI PTST(K-1)
                  C
   ISN 0005             DO 30 I=1,NEQ
   ISN 0006             IF (EQM(I) .LT. EQFACT(1,1)) GO TO 25
   ISN 0008             DO 10 J=2,15
   ISN 0009             IF (EQFACT(J,1) .GE. EQM(I)) GO TO 20
   ISN 0011          10 CONTINUE
   ISN 0012             SEQ(I) = EQFACT(15,IEQ)
   ISN 0013          20 K = J-1
   ISN 0014             SEQ(I) = EQFACT(K,IEQ) + (EQM(I) - EQFACT(K,1)) *
                       1        ((EQFACT(J,IEQ)-EQFACT(K,IEQ)) / (EQFACT(J,1)-EQFACT(K,1)
                       2                                                                    ))
   ISN 0015             GO TO 30
   ISN 0016          25 SEQ(I) = EQFACT(1,IEQ) * EQM(I) / EQFACT(1,1)
   ISN 0017          30 CONTINUE
   ISN 0018             RETURN
   ISN 0019             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      18, PROGRAM SIZE =      852, SUBPROGRAM NAME =STEREQ

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED              DATE 82.147/20.15.59          PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE INTVL (A1, A2, N, N1, IS, NN, A3, NM)
                   C
                   C     THIS ROUTINE CONVERTS THE END-OF-INTERVAL KIP TABLES TO EVENLY
                   C     DISTRIBUTED INTERVALS BASED ON THE VARIABLE *SIZE*.
                   C
                   C     THE INPUTS ARE
                   C       1. A1 - ARRAY OF END-OF-INTERVAL KIP VALUES
                   C       2. N -- NUMBER OF VALUES IN A1
                   C       3. IS - ARRAY IDENTIFIER WHERE,
                   C                IS=1 - SINGLE AXLE ARRAY
                   C                IS=2 - TANDEM AXLE ARRAY
                   C                IS=3 - TRIPLE AXLE ARRAY
                   C                IS=4 - GROSS WEIGHT ARRAY
                   C                IS=5 - EMPTY WEIGHT ARRAY
                   C                IS=6 - STEERING AXLE ARRAY
                   C       4. NN - MAXIMUM ALLOWABLE ROW LENGTH OF A1
                   C       5. NM - INDICATES WHICH TRUCK TYPE IS CURRENTLY BEING CONSIDERED
                   C
                   C     THE OUTPUTS ARE
                   C       1. N1 - THE NEW LENGTH OF THE END-OF-INTERVAL KIP TABLE
                   C       2. A2 - THE NEW END-OF-INTERVAL KIP TABLE
                   C       3. A3 - THE NUMBER OF TRUCKS (OR AXLES) WEIGHED IN EACH INTERVAL
                   C
   ISN 0003              COMMON /INTVLS/ STARTS(6)
   ISN 0004              COMMON /CNSTS/ NAPOV, PAPOV, SIZE, AVRG
   ISN 0005              DIMENSION A1(NN,1), A2(1), A3(1), ACC(75)
   ISN 0006              XMLOAD = A1(N,11)
   ISN 0007              A2(1) = SIZE
                   C
                   C     SET *S* TO  THE LARGEST EVEN NUMBER GREATER THAN OR EQUAL TO THE
                   C     FIRST END-OF-INTERVAL KIP VALUE
                   C
   ISN 0008              S = 0.
   ISN 0009              K = 0
   ISN 0010            5 IF (S .GE. STARTS(IS)) GO TO 7
   ISN 0012              S = S + SIZE
   ISN 0013              K = K+1
   ISN 0014              GO TO 5
                   C
                   C     SET UP THE EVENLY DISTRIBUTED END-OF-INTERVAL KIP TABLE AND ZERO
                   C     ALL INTERVALS AT BEGINNING OF TABLE IN WHICH NO TRUCKS/AXLES WERE
                   C     WEIGHED
                   C
   ISN 0015            7 I = 1
   ISN 0016              J = 1
   ISN 0017           10 IF (A2(I) .GE. XMLOAD) GO TO 20
   ISN 0019              I = I+1
   ISN 0020              A2(I) = A2(J) + SIZE
   ISN 0021              J = J+1
   ISN 0022              GO TO 10
   ISN 0023           20 N1 = I
   ISN 0024              DO 30 I=1,K
   ISN 0025              A3(I) = 0.
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ISN 0026        30 CONTINUE
ISN 0027           I = K+1
ISN 0028           CALL ACMLTE (A1(1,NM), N, ACC)
ISN 0029           CALL ITRP (A1(1,11), ACC, A2, I, N1, N, A3, 1)
ISN 0030           RETURN
ISN 0031           END
```

```
*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       30, PROGRAM SIZE =      1236, SUBPROGRAM NAME = INTVL

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                 136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.16.04        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE ITRP (V1, V2, V3, LIS, NV, NL, V4, IV)
                   C
                   C     THIS ROUTINE PERFORMS LINEAR INTERPOLATION
                   C
                   C     THE INPUTS ARE
                   C       1. V1 -- ARRAY OF X1 VALUES
                   C       2. V2 -- ARRAY OF F2(X) VALUES
                   C       3. V3 -- ARRAY OF X-VALUES
                   C       4. LIS - FIRST NON-ZERO VALUE IN V3
                   C       5. NV -- LAST VALUE IN V3
                   C       6. NL -- LAST VALUE IN V1
                   C       7. IV -- INTERPOLATION INDICATOR WHERE,
                   C                  IV=1 - VALUES ARE CUMULATIVE
                   C                     0 - VALUES ARE NOT CUMULATIVE
                   C
                   C     THE OUTPUT IS
                   C       V4 -- ARRAY OF INTERPOLATED RESULTS
                   C
   ISN 0003              DIMENSION V1(1), V2(1), V3(1), V4(1)
   ISN 0004              IF (LIS .EQ. 1) V4(1) = 0.0
   ISN 0006              J = 1
   ISN 0007              DO 50 I=LIS,NV
   ISN 0008              DO 10 K=J,NL
                   C
                   C     FIND THE SMALLEST X1 GREATER THAN OR EQUAL TO X
                   C
   ISN 0009              IF (V1(K) .GE. V3(I)) GO TO 20
   ISN 0011           10 CONTINUE
   ISN 0012              K = NL+1
   ISN 0013              V2SV = V2(K)
   ISN 0014              V1SV = V1(K)
   ISN 0015              V2(K) = V2(NL)
   ISN 0016              V1(K) = V3(I)
   ISN 0017              L = NL
   ISN 0018              GO TO 25
                   C
                   C     SET X1 AND F1 VALUES APPROPRIATELY, THEN INTERPOLATE
                   C
   ISN 0019           20 J = K
   ISN 0020              L = K-1
   ISN 0021              IF (L .EQ. 0) GO TO 30
   ISN 0023           25 F1 = V2(L)
   ISN 0024              X1 = V1(L)
   ISN 0025              GO TO 40
   ISN 0026           30 X1 = 0.0
   ISN 0027              F1 = V4(1)
   ISN 0028           40 V4(I) = F1 + (V3(I)-X1) * ((V2(K)-F1) / (V1(K)-X1))
   ISN 0029              IF (K .LE. NL) GO TO 50
   ISN 0031              V2(K) = V2SV
   ISN 0032              V1(K) = V1SV
   ISN 0033           50 CONTINUE
                   C
                   C     IF VALUES ARE CUMULATIVE, SUBTRACT TO GET CORRECT VALUES PER
```

```
              C      INTERVAL
              C
  ISN 0034           IF (IV .EQ. 0) GO TO 999
  ISN 0036           J = NV
  ISN 0037           DO 60 I=2,NV
  ISN 0038           V4(J) = V4(J) - V4(J-1)
  ISN 0039           J = J-1
  ISN 0040        60 CONTINUE
  ISN 0041       999 RETURN
  ISN 0042           END
```

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 41, PROGRAM SIZE = 1132, SUBPROGRAM NAME = ITRP

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 136K BYTES OF CORE NOT USED

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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.16.09        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE PCTAGE (P1, NP, P2)
                C
                C        THIS ROUTINE SUMS THE *NP* VALUES IN ARRAY P1 AND DETERMINES, FOR
                C        EACH VALUE IN P1, ITS PERCENTAGE OF THE TOTAL
                C
   ISN 0003              DIMENSION P1(1), P2(1)
   ISN 0004              TOT = 0.0
   ISN 0005              DO 10 I=1,NP
   ISN 0006              TOT = TOT + P1(I)
   ISN 0007           10 CONTINUE
   ISN 0008              DO 20 I=1,NP
   ISN 0009              P2(I) = P1(I) / TOT * 100.0
   ISN 0010           20 CONTINUE
   ISN 0011              RETURN
   ISN 0012              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       11, PROGRAM SIZE =       440, SUBPROGRAM NAME =PCTAGE

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE COUNT (CA, ICA)
                C
                C       THIS ROUTINE DETERMINES WHICH OF THE *ICA* VALUES IN ARRAY CA IS
                C       THE LAST NON-ZERO VALUE
                C
   ISN 0003             DIMENSION CA(1)
   ISN 0004             DO 10 I=1,ICA
   ISN 0005             IF (CA(I) .GT. 0.0) J = I
   ISN 0007          10 CONTINUE
   ISN 0008             ICA = J
   ISN 0009             RETURN
   ISN 0010             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       9, PROGRAM SIZE =       326, SUBPROGRAM NAME = COUNT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.16.22        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002          SUBROUTINE ACMLTE (AIN, NA, AOUT)
              C
              C     THIS ROUTINE CONVERTS ARRAY AIN TO A CUMULATIVE ARRAY
              C
  ISN 0003          DIMENSION AIN(1), AOUT(1)
  ISN 0004          AOUT(1) = AIN(1)
  ISN 0005          NB = NA-1
  ISN 0006          DO 10 I=1,NB
  ISN 0007          J = I+1
  ISN 0008          AOUT(J) = AOUT(I) + AIN(J)
  ISN 0009       10 CONTINUE
  ISN 0010          RETURN
  ISN 0011          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      10, PROGRAM SIZE =      410, SUBPROGRAM NAME =ACMLTE

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                136K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002               SUBROUTINE MIDPNT (X1, NM, X2)
                    C
                    C     THIS ROUTINE DETERMINES THE MIDPOINT OF EACH INTERVAL IN ARRAY X1,
                    C     WHERE EACH VALUE IN X1 IS AN END-OF-INTERVAL KIP VALUE
                    C
   ISN 0003               COMMON /CNSTS/ NAPOV, PAPOV, SIZE, AVRG
   ISN 0004               DIMENSION X1(1), X2(1)
   ISN 0005               I = 0
   ISN 0006               J = 1
   ISN 0007               ELI = X1(NM)
   ISN 0008               X2(1) = X1(1) - (SIZE/2.)
   ISN 0009            10 I = I+1
   ISN 0010               J = J+1
   ISN 0011               X2(J) = X2(I) + SIZE
   ISN 0012               IF (X1(J) .LT. ELI) GO TO 10
   ISN 0014               RETURN
   ISN 0015               END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      14, PROGRAM SIZE =      448, SUBPROGRAM NAME =MIDPNT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                       136K BYTES OF CORE NOT USED
```

```
LEVEL 2.3.0 (JUNE 78)                OS/360  FORTRAN H EXTENDED          DATE 82.147/20.16.27        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE MULT (YA, YB, NU, YC)
                  C
                  C     THIS ROUTINE MULTIPLIES TWO VECTORS SUCH THAT YC(I) = YA(I)*YB(I)
                  C
   ISN 0003             DIMENSION YA(1), YB(1), YC(1)
   ISN 0004             DO 10 I=1,NU
   ISN 0005             YC(I) = YA(I) * YB(I)
   ISN 0006          10 CONTINUE
   ISN 0007             RETURN
   ISN 0008             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       7, PROGRAM SIZE =      396, SUBPROGRAM NAME =  MULT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED              DATE 82.147/20.16.29        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              SUBROUTINE AVRGE (AV, NV, AN, AVG)
                C
                C        THIS ROUTINE COMPUTES THE AVERAGE OF THE VALUES IN ARRAY AV
                C        OVER *AN*
                C
   ISN 0003              DIMENSION AV(1)
   ISN 0004              AVG = 0.0
   ISN 0005              DO 10 I=1,NV
   ISN 0006              AVG = AV(I) + AVG
   ISN 0007           10 CONTINUE
   ISN 0008              AVG = AVG / AN
   ISN 0009              RETURN
   ISN 0010              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       9, PROGRAM SIZE =      350, SUBPROGRAM NAME = AVRGE

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                         136K BYTES OF CORE NOT USED
```

```
LEVEL 2.3.0 (JUNE 78)                        OS/360  FORTRAN H EXTENDED            DATE 82.147/20.16.31        PAGE   1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002             SUBROUTINE DIFF (D1, ND, D2)
                  C
                  C     THIS ROUTINE TAKES SUCCESSIVE DIFFERENCES OF THE VALUES IN
                  C     ARRAY D1
                  C
   ISN 0003             DIMENSION D1(1), D2(1)
   ISN 0004             D2(1) = D1(1)
   ISN 0005             DO 10 I=2,ND
   ISN 0006             J = I-1
   ISN 0007             D2(I) = D1(I) - D1(J)
   ISN 0008          10 CONTINUE
   ISN 0009             RETURN
   ISN 0010             END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       9, PROGRAM SIZE =      390, SUBPROGRAM NAME =  DIFF

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  136K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE SUM (S1, NS, S2)
               C
               C     THIS ROUTINE COMPUTES THE SUM OF THE VALUES IN ARRAY S1
               C
   ISN 0003          DIMENSION S1(1)
   ISN 0004          S2 = 0.0
   ISN 0005          DO 10 I=1,NS
   ISN 0006          S2 = S2 + S1(I)
   ISN 0007       10 CONTINUE
   ISN 0008          RETURN
   ISN 0009          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       8, PROGRAM SIZE =      322, SUBPROGRAM NAME =   SUM

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    136K BYTES OF CORE NOT USED
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```
 LEVEL 2.3.0 (JUNE 78)                          OS/360  FORTRAN H EXTENDED            DATE 82.147/20.16.39        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002           SUBROUTINE ZERO (A,N)
   ISN 0003           DIMENSION A(N)
   ISN 0004           DO 10 I=1,N
   ISN 0005        10 A(I) = 0.
   ISN 0006           RETURN
   ISN 0007           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       6, PROGRAM SIZE =      280, SUBPROGRAM NAME =  ZERO

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                          136K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE INTERP (X, F, N, XR, FR)
               C       PARABOLIC INTERPOLATION (LINEAR IF ONLY TWO POINTS GIVEN) FOR
               C       FR(XR) GIVEN N VALUES FOR F(X).
               C       INPUT VALUES OF X MUST BE MONOTONIC INCREASING OR DECREASING.
               C       EXTRAPOLATION, WHEN NEEDED, IS PARABOLIC. USE WITH CARE.
   ISN 0003            DIMENSION X(N), F(N)
   ISN 0004            IF (N .GT. 2) GO TO 10
   ISN 0006            FI = F(1) + (XR-X(1))*(F(2)-F(1))/(X(2)-X(1))
   ISN 0007            GO TO 99
   ISN 0008         10 CONTINUE
   ISN 0009            IB = 1
   ISN 0010            IF (N .EQ. 3) GO TO 30
   ISN 0012            R = +1.
   ISN 0013            IF (X(2) .LT. X(1)) R = -1.
   ISN 0015            DO 15 I=2,N
   ISN 0016            IX = I
   ISN 0017            IF ((X(I) - XR)*R .GT. 0.) GO TO 20
   ISN 0019         15 CONTINUE
   ISN 0020         20 IF  ((2.*XR - X(IX-1) - X(IX))*R .LT. 0.) IX = IX - 1
   ISN 0022            IB = IX - 1
   ISN 0023            IF (IB .LT. 1) IB = 1
   ISN 0025            IF (IB .GT. (N-2)) IB = N-2
   ISN 0027         30 FI = PARAB (XR, X(IB), F(IB))
   ISN 0028         99 FR = FI
   ISN 0029            RETURN
   ISN 0030            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       29, PROGRAM SIZE =       976, SUBPROGRAM NAME =INTERP

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED              DATE 82.147/20.16.50        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              FUNCTION PARAB (XR, X, F)
                   C     PART OF INTERPOLATION PACKAGE.
                   C     PARABOLIC FUNCTION VALUE IS F(XR), GIVEN THREE VALUES F(X).
   ISN 0003              DIMENSION X(3), F(3)
   ISN 0004              XL = X(2) - X(1)
   ISN 0005              XU = X(3) - X(2)
   ISN 0006              D = XL*XU*(X(3) - X(1))
   ISN 0007              P1 = XL*(F(3)-F(2))
   ISN 0008              P2 = XU*(F(2)-F(1))
   ISN 0009              S1 = P1*XL+P2*XU
   ISN 0010              S2 = P1 - P2
   ISN 0011              T = XR - X(2)
   ISN 0012              PARAB =F(2)+ (S1 +S2*T)*T/D
   ISN 0013              RETURN
   ISN 0014              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      13, PROGRAM SIZE =      528, SUBPROGRAM NAME = PARAB

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  136K BYTES OF CORE NOT USED
```

```
LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.16.57       PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002           SUBROUTINE TEXAS (TOTEAL)
   ISN 0003           REAL XMNW18
   ISN 0004           COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0005           COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                     *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0006           COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0007           C(2) = C(2) + 50.
   ISN 0008           W = TR(NPT)
   ISN 0009           CALL PSIT(P,PF,W,XKT)
   ISN 0010           IF(PT(NPT).LE.PF) GO TO 40
   ISN 0012           CALL STAOPT(NPT,TOTEAL)
   ISN 0013           GO TO 41
   ISN 0014        40 CONTINUE
   ISN 0015           CALL DTROPT(NPT,TOTEAL)
   ISN 0016       41  CONTINUE
   ISN 0017            RETURN
   ISN 0018           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      17, PROGRAM SIZE =      396, SUBPROGRAM NAME = TEXAS

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    136K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE STAOPT(NPT,TOTEAL)
   ISN 0003            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0004            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0005            GO TO (10,20,30,40,50),NPT
   ISN 0006         10 CALL W18PRY(NPT,TOTEAL)
   ISN 0007            GO TO 60
   ISN 0008         20 CALL W18PRY(NPT,TOTEAL)
   ISN 0009            GO TO 60
   ISN 0010         30 CALL W18PRY(NPT,TOTEAL)
   ISN 0011            GO TO 60
   ISN 0012         40 CALL W18PRY(NPT,TOTEAL)
   ISN 0013            GO TO 60
   ISN 0014         50 CALL W18PRY(NPT,TOTEAL)
   ISN 0015         60 CONTINUE
   ISN 0016            RETURN
   ISN 0017            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       16, PROGRAM SIZE =       410, SUBPROGRAM NAME =STAOPT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.17.08        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE W18PRY(NPT,TOTEAL)
   ISN 0003          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                    *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0004          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0005          XN = 4.51
   ISN 0006          CALL PSIT(P,PF,W,XKT)
   ISN 0007          IF(PF.LE.1.4) PF = 1.45
   ISN 0009          TOTEAL = (-XKT/ALOG((PI(NPT)-PT(NPT))/(PI(NPT)-PF)))**1./XN
   ISN 0010          RETURN
   ISN 0011          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       10, PROGRAM SIZE =       492, SUBPROGRAM NAME =W18PRY

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.17.13        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE DTROPT (NPT,TOTEAL)
   ISN 0003          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                    *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0004          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0005          K = 0
   ISN 0006          CALL ALGRA(NPT,WAREA,WSEVER)
   ISN 0007          XMNW18(1) = AA
   ISN 0008          K = K + 1
   ISN 0009          CALL LOCRA(NPT,WAREA,WSEVER)
   ISN 0010          XMNW18(2) = AA
   ISN 0011          K = K + 1
   ISN 0012          CALL TRCRA(NPT,WAREA,WSEVER)
   ISN 0013          XMNW18(9) = AA
   ISN 0014          K = K + 1
   ISN 0015          CALL  RUTA(NPT,WAREA,WSEVER)
   ISN 0016          XMNW18(3) = AA
   ISN 0017          K = K + 1
   ISN 0018          CALL FLSHA(NPT,WAREA,WSEVER)
   ISN 0019          XMNW18(4) = AA
   ISN 0020          K = K + 1
   ISN 0021          CALL  CORA(NPT,WAREA,WSEVER)
   ISN 0022          XMNW18(5) = AA
   ISN 0023          K = K + 1
   ISN 0024          CALL  PATA(NPT,WAREA,WSEVER)
   ISN 0025          XMNW18(6) = AA
   ISN 0026          K = K + 1
   ISN 0027          CALL  RAVA(NPT,WAREA,WSEVER)
   ISN 0028          XMNW18(7) = AA
   ISN 0029          K = K + 1
   ISN 0030          CALL  FAPM(NPT,WAREA,WSEVER)
   ISN 0031          XMNW18(8) = AA
   ISN 0032          K= K + 1
   ISN 0033          W18T = AMIN1(XMNW18(1),XMNW18(2),XMNW18(3),XMNW18(4),XMNW18(5),XMN
                    *W18(6),XMNW18(7),XMNW18(8),XMNW18(9))
   ISN 0034          TOTEAL = W18T
   ISN 0035          RETURN
   ISN 0036          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       35, PROGRAM SIZE =      876, SUBPROGRAM NAME =DTROPT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE ALGRA(NPT,WAREA,WSEVER)
   ISN 0003            DOUBLE PRECISION PWR1,PWR2
   ISN 0004            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0005            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0006            COMMON/MIN/SF,A0,A1,A2
   ISN 0007            GO TO (10,20,30,40,50),NPT
   ISN 0008         10 CONTINUE
   ISN 0009            A0=10.0**6.81
   ISN 0010            A1=10.0**1.233
   ISN 0011            A2=10.0**6.57
   ISN 0012            SF=10.0**(-1.09)*T(1)**(-5.84)*S(1)**17.3*S(3)**(-9.82)*TR(1)**6.7
                      *8*TR(2)**(-9.07)
   ISN 0013            GO TO 60
   ISN 0014         20 CONTINUE
   ISN 0015            A0=10.0**7.01
   ISN 0016            A1=10.0**26.46*DF(2)**.24*C(1)**(-1.17)*S(1)**1.25*C(2)**(-15.41)*
                      *T(1)**1.24
   ISN 0017            A2=10.0**6.886
   ISN 0018            SF=10.0**(-1.07)*DF(2)**1.05*C(1)**(-4.64)*S(3)**1.97*T(1)**5.22
   ISN 0019            GO TO 60
   ISN 0020         30 CONTINUE
   ISN 0021            A0=10.0**7.47*C(2)**(-.00016)*DF(1)**(-.00017)*C(4)**(-.00011)*T(1
                      *)**.00013*TR(1)**(-.00012)
   ISN 0022            A1=10.0**1.491
   ISN 0023            A2=10.0**7.43
   ISN 0024            SF=10.0**(-.247)
   ISN 0025            GO TO 60
   ISN 0026         40 CONTINUE
   ISN 0027            A0=10.0**6.877
   ISN 0028            A1=10.0**.487
   ISN 0029            A2=10.0**6.74
   ISN 0030            SF=10.0**(-.726)
   ISN 0031            GO TO 60
   ISN 0032         50 CONTINUE
   ISN 0033            A0=10.0**7.029
   ISN 0034            A1=10.0**.819
   ISN 0035            A2=10.0**5.877
   ISN 0036            SF=10.0**3.524
   ISN 0037         60 CONTINUE
   ISN 0038            CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0039            RETURN
   ISN 0040            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      39, PROGRAM SIZE =      2284, SUBPROGRAM NAME = ALGRA

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   132K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.17.21        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE LOCRA(NPT,WAREA,WSEVER)
   ISN 0003            DOUBLE PRECISION PWR1,PWR2
   ISN 0004            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0005            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0006            COMMON/MIN/SF,A0,A1,A2
   ISN 0007            GO TO (10,20,30,40,50),NPT
   ISN 0008         10 CONTINUE
   ISN 0009            A0=10.0**2.597
   ISN 0010            A1=10.0**1.089
   ISN 0011            A2=10.0**2.501
   ISN 0012            SF=10.**(-44.85)*S(1)**14.61*DT(1)**(-12.75)*C(2)**8.46*C(3)**1.71
                      **S(2)**24.62*S(3)**(-22.61)
   ISN 0013            GO TO 60
   ISN 0014         20 CONTINUE
   ISN 0015             A0 = 10.0**1.845
   ISN 0016            A1=10.0**20.68*C(2)**(-11.7)*T(1)**.54*S(1)**.83*S(3)**(-.27)*TR(2
                      *)**(-.17)
   ISN 0017            A2=10.0**1.741
   ISN 0018            SF=10.0**1.26*TR(2)**(-1.35)*S(3)**(-1.29)*T(1)**4.49
   ISN 0019            GO TO 60
   ISN 0020         30 CONTINUE
   ISN 0021            A0=10.**3.05*DT(1)**(-.00055)*C(5)**.00026*S(3)**(-.00049)*S(1)**(
                      *-.0013)
   ISN 0022            A1=10.0**(-.36)*S(2)**.33*C(2)**.39*DF(3)**(-.076)*C(5)**(-.49)*S(
                      *1)**1.28
   ISN 0023            A2=10.0**3.0
   ISN 0024            SF=10.0**(-11.07)*T(1)**2.11*C(5) **(-5.1)*C(1)**(-6.78)*S(3)**7.1
                      *8*S(1)**14.39
   ISN 0025            GO TO 60
   ISN 0026         40 CONTINUE
   ISN 0027            A0=10.0**2.161
   ISN 0028            A1=10.0**1.413
   ISN 0029            A2=10.0**4.21*C(3)**(-.17)*DF(2)**.16*S(1)**(-.86)*TR(1)**.18*C(2)
                      ***(-1.23)
   ISN 0030            SF =10.0**(-15.37)*S(2)**(-3.79)*TR(1)**(-.7)*C(2)**7.*C(3)**1.88*
                      *S(1)**16.74*T(1)**(-2.0)
   ISN 0031            GO TO 60
   ISN 0032         50 CONTINUE
   ISN 0033            A0=10.0**2.06
   ISN 0034            A1=10.0**.879
   ISN 0035            A2=10.0**1.602
   ISN 0036            SF=10.0**(-1.06)
   ISN 0037         60 CONTINUE
   ISN 0038            CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0039            RETURN
   ISN 0040            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       39, PROGRAM SIZE =      3410, SUBPROGRAM NAME = LOCRA
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED           DATE 82.147/20.17.21        PAGE   2
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                                  124K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                          OS/360  FORTRAN H EXTENDED            DATE 82.147/20.17.23        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

    ISN 0002              SUBROUTINE TRCRA(NPT,WAREA,WSEVER)
    ISN 0003              DOUBLE PRECISION PWR1,PWR2
    ISN 0004              COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                         *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
    ISN 0005              COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
    ISN 0006              COMMON/MIN/SF,AO,A1,A2
    ISN 0007              W = TR(1)
    ISN 0008              GO TO (10,20,30,40,50),NPT
    ISN 0009           10 CONTINUE
    ISN 0010              AO=10.0**2.496
    ISN 0011              A1=10.0**1.132
    ISN 0012              A2=10.**(-14.64)*DT(1)**5.74*DF(3)**1.34*S(4)**17.44*C(3)**(-.25)*
                         *T(1)**(-2.36)
    ISN 0013              SF=10.0**(-.754)
    ISN 0014              GO TO 60
    ISN 0015           20 CONTINUE
    ISN 0016              AO=10.0**2.126
    ISN 0017              A1=10.0**.473*C(3)**(-.26)*C(5)**(-1.21)*TR(2)**(-.41)*DF(2)**
                         *(-.26)*T(1)**2.12
    ISN 0018              A2=10.0**(-1.7)*T(1)**(-.7)*C(5)**1.54*C(3)**.83*DT(1)**(-4.03)
    ISN 0019              SF=10.0**11.79*C(5)**(-6.23)*TR(2)**(-1.41)*C(3)**(-2.69)*T(1)**
                         *7.2*DT(1)**12.76
    ISN 0020              GO TO 60
    ISN 0021           30 CONTINUE
    ISN 0022              AO=10.0**2.843
    ISN 0023              A1=10.0**1.464
    ISN 0024              A2=10.0**2.812
    ISN 0025              SF=10.0**(-1.965)
    ISN 0026              GO TO 60
    ISN 0027           40 CONTINUE
    ISN 0028              AO=10.0**2.581
    ISN 0029              A1=10.0**1.431
    ISN 0030              A2=10.0**2.533
    ISN 0031              SF=10.0**(-.936)
    ISN 0032              GO TO 60
    ISN 0033           50 CONTINUE
    ISN 0034              AO=10.0**.88
    ISN 0035              A1=10.0**.728
    ISN 0036              A2=10.0**.887
    ISN 0037              SF=10.0**(-1.294)
    ISN 0038           60 CONTINUE
    ISN 0039              CALL MINIMU(NPT,WAREA,WSEVER)
    ISN 0040              RETURN
    ISN 0041              END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      40, PROGRAM SIZE =     2342, SUBPROGRAM NAME = TRCRA

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      128K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002         SUBROUTINE  RUTA(NPT,WAREA,WSEVER)
   ISN 0003         DOUBLE PRECISION PWR1,PWR2
   ISN 0004         COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                   *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0005         COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0006         COMMON/MIN/SF,A0,A1,A2
   ISN 0007         W = TR(1)
   ISN 0008         GO TO(10,20,30,40,50),NPT
   ISN 0009      10 CONTINUE
   ISN 0010         A0=10.0**6.562
   ISN 0011         A1=10.0**1.98*S(3)**(-.82)*C(1)**.47*DF(1)**.54*W**(-.31)
   ISN 0012         A2=10.0**6.294
   ISN 0013         SF=10.0**9.42*DF(1)**3.45*W**(-1.91)*S(3)**(-5.54)*C(1)**2.8
   ISN 0014         GO TO 60
   ISN 0015      20 CONTINUE
   ISN 0016         A0=10.0**6.97*DF(2)**.0054*S(3)**.0033*C(3)**(-.0029)*TR(2)**.0098
                   **T(1)**.022*TR(1)**(-.018)
   ISN 0017         A1=10.0**.36*S(1)**(-.88)*DF(3)**.36*C(4)**.23*TR(1)**.38*TR(2)**(
                   *-.45)
   ISN 0018         A2=10.0**(-7.35)*DF(3)**(-1.34)*C(4)**1.81*S(1)**7.11*TR(1)**(-.58
                   *)*C(1)**11.23*C(5)**(-8.22)
   ISN 0019         SF=10.0**(-1.13)*DF(3)**2.44*C(4)**.9*S(1)**(-5.25)*TR(2)**(-2.32)
                   **TR(1)**1.84
   ISN 0020         GO TO 60
   ISN 0021      30 CONTINUE
   ISN 0022         A0=10.0**7.05*C(3)**.0006*T(1)**.00035*C(4)**(-.00067)*TR(1)**(-.0
                   *0041)
   ISN 0023         A1=10.0**1.009
   ISN 0024         A2=10.0**7.32*TR(1)**(-.15)*T(1)**(-.25)*S(3)**(-.97)*C(5)**.55*S(
                   *2)**1.83*S(1)**(-1.75)
   ISN 0025         SF=10.0**1.58
   ISN 0026         GO TO 60
   ISN 0027      40 CONTINUE
   ISN 0028         A0=10.0**7.17*C(1)**(-.0053)*TR(1)**(-.0041)*C(5)**.011*S(3)**.017
                   **S(2)**(-.03)
   ISN 0029         A1=10.0**(-1.86)*C(2)**.84*C(5)**(-.69)*S(3)**.4*TR(1)**.25*T(1)**
                   *.38*TR(2)**(-.27)
   ISN 0030         A2=10.0**7.014
   ISN 0031         SF=10.0**(-12.95)*C(2)**3.55*C(5)**(-.35)*S(3)**1.85*TR(1)**1.73*
                   *TR(2)**(-2.15)*T(1)**3.27
   ISN 0032         GO TO 60
   ISN 0033      50 CONTINUE
   ISN 0034         A0=10.0**6.951
   ISN 0035         A1=10.0**.651
   ISN 0036         A2=10.0**5.619
   ISN 0037         SF=10.0**1.852
   ISN 0038      60 CONTINUE
   ISN 0039         CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0040         RETURN
   ISN 0041         END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)
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*STATISTICS*     SOURCE STATEMENTS =      40, PROGRAM SIZE =      4356, SUBPROGRAM NAME =  RUTA
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                                   120K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE FLSHA(NPT,WAREA,WSEVER)
   ISN 0003          DOUBLE PRECISION PWR1,PWR2
   ISN 0004          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                    *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0005          COMMON/MIN/SF,A0,A1,A2
   ISN 0006          W = TR(1)
   ISN 0007          GO TO (10,20,30,40,50),NPT
   ISN 0008       10 CONTINUE
   ISN 0009          A0=10.0**4.814
   ISN 0010          A1=10.0**1.439
   ISN 0011          A2=10.0**5.34*DT(1)**4.89*C(1)**(-5.54)*S(3)**(-5.7)*C(4)**(-1.72)
                    **S(2)**10.98
   ISN 0012          SF=10.0**.269
   ISN 0013          GO TO 60
   ISN 0014       20 CONTINUE
   ISN 0015          A0=10.0**4.98*S(4)**(-.013)*DF(1)**.0034*DF(3)**(-.0061)*TR(2)**
                    *(-.0012)*DT(1)**(-.019)
   ISN 0016          A1=10.0**(-9.57)*C(4)**.37*TR(1)**.19*S(4)**6.17*DT(1)**4.56*S(3)
                    ***(-1.83)*S(2)**4.28
   ISN 0017          A2=10.**22.02*DT(1)**3.15*C(1)**(-7.4)*C(3)**(-2.9)*S(1)**(-3.54)*
                    *T(1)**2.07*TR(1)**(-.76)
   ISN 0018          SF = 10.0**.844
   ISN 0019          GO TO 60
   ISN 0020       30 CONTINUE
   ISN 0021          A0=10.0**4.96*DF(3)**.00024*C(2)**.0004*TR(2)**(-.00011)*
                    *C(6)**(-.076)*C(1)**.0015*C(4)**(-.00024)
   ISN 0022          A1=10.0**1.8
   ISN 0023          A2=10.0**5.06*C(4)**(-.15)*DT(1)**(-1.16)*S(3)**.38*TR(1)**(-.3)*
                    *DF(1)**(-.36)
   ISN 0024          SF = 10.0**0.576
   ISN 0025          GO TO 60
   ISN 0026       40 CONTINUE
   ISN 0027          A0=10.0**5.142
   ISN 0028          A1=10.0**1.326
   ISN 0029          A2=10.0**5.028
   ISN 0030          SF=10.0**.713
   ISN 0031          GO TO 60
   ISN 0032       50 CONTINUE
   ISN 0033          A0=10.0**4.408
   ISN 0034          A1=10.0**.746
   ISN 0035          A2=10.0**3.225
   ISN 0036          SF=10.0**3.068
   ISN 0037       60 CONTINUE
   ISN 0038          CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0039          RETURN
   ISN 0040          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      39, PROGRAM SIZE =      3068, SUBPROGRAM NAME = FLSHA

*STATISTICS*  NO  DIAGNOSTICS GENERATED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.17.29        PAGE   2

****** END OF COMPILATION ******                                    128K BYTES OF CORE NOT USED
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```
REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE  CORA(NPT,WAREA,WSEVER)
   ISN 0003            DOUBLE PRECISION PWR1,PWR2
   ISN 0004            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0005            COMMON/MIN/SF,A0,A1,A2
   ISN 0006            W = TR(1)
   ISN 0007            GO TO (10,20,30,40,50),NPT
   ISN 0008         10 CONTINUE
   ISN 0009            A0=0.
   ISN 0010            A1=10.0**(-1.77)*C(1)**1.18*C(3)**.51*S(1)**.67*T(1)**.91*TR(1)**
                      *(-.86)*W**.9
   ISN 0011            A2=0.
   ISN 0012            SF=10.0**(-5.96)*C(1)**2.37*C(3)**1.03*S(1)**1.37*T(1)**1.91*TR(1)
                      ***(-1.74)*TR(2)**1.83
   ISN 0013            GO TO 60
   ISN 0014         20 CONTINUE
   ISN 0015            A0=0.
   ISN 0016            A1=10.0**(-.0434)
   ISN 0017            A2=0.
   ISN 0018            SF=10.0**(-2.22)
   ISN 0019            GO TO 60
   ISN 0020         30 CONTINUE
   ISN 0021            A0=10.0**6.225
   ISN 0022            A1=10.0**.977
   ISN 0023            A2=10.0**6.178
   ISN 0024            SF=10.0**(-1.908)
   ISN 0025            GO TO 60
   ISN 0026         40 CONTINUE
   ISN 0027            A0=10.0**.143
   ISN 0028            A1=10.0**(-4.95)*C(3)**(-.063)*C(5)**(-.22)*S(4)**4.58
   ISN 0029            A2  = 10.0**.139
                 C
                 C***********  CRITIC SEVERITY ******  IS TOO BIG  ****************
                 C
   ISN 0030            SF = .899
   ISN 0031            GO TO 60
   ISN 0032         50 CONTINUE
   ISN 0033            A0=0.
   ISN 0034            A1=0.
   ISN 0035            A2=0.
   ISN 0036            SF=0.
   ISN 0037         60 CONTINUE
   ISN 0038            CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0039            RETURN
   ISN 0040            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      39, PROGRAM SIZE =      1790, SUBPROGRAM NAME =  CORA

*STATISTICS*  NO  DIAGNOSTICS GENERATED
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****** END OF COMPILATION ******                    132K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE  PATA(NPT,WAREA,WSEVER)
   ISN 0003            DOUBLE PRECISION PWR1,PWR2
   ISN 0004            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0005            COMMON/MIN/SF,AO,A1,A2
   ISN 0006            W = TR(1)
   ISN 0007            GO TO (10,20,30,40,50),NPT
   ISN 0008         10 CONTINUE
   ISN 0009            AO=10.0**6.35
   ISN 0010            A1=10.0**1.077
   ISN 0011            A2 = 10.0**6.165
   ISN 0012            SF=10.0**(-1.275)
   ISN 0013            GO TO 60
   ISN 0014         20 CONTINUE
   ISN 0015            AO=10.0**6.779
   ISN 0016            A1=10.0**.65
   ISN 0017            A2=10.0**6.666
   ISN 0018            SF=10.0**(-1.688)
   ISN 0019            GO TO 60
   ISN 0020         30 CONTINUE
   ISN 0021            AO=10.0**6.92*DF(1)**.0014*DF(3)**(-.002)*C(5)**.00065*C(2)**
                      *(-.0015)*S(4)**(-.0017)
   ISN 0022            A1=10.0**1.602
   ISN 0023            A2=10.0**6.864
   ISN 0024            SF=10.0**(-1.309)
   ISN 0025            GO TO 60
   ISN 0026         40 CONTINUE
   ISN 0027            AO=10.0**6.878
   ISN 0028            A1=10.0**1.172
   ISN 0029            A2=10.0**6.781
   ISN 0030            SF=10.0**(-1.471)
   ISN 0031            GO TO 60
   ISN 0032         50 CONTINUE
   ISN 0033            AO=10.0**6.651
   ISN 0034            A1=10.0**.925
   ISN 0035            A2=10.0**5.327
   ISN 0036            SF=10.0**(-.891)
   ISN 0037         60 CONTINUE
   ISN 0038            CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0039            RETURN
   ISN 0040            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      39, PROGRAM SIZE =      1548, SUBPROGRAM NAME =  PATA

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                              136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED            DATE 82.147/20.17.44        PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002          SUBROUTINE  RAVA(NPT,WAREA,WSEVER)
  ISN 0003          DOUBLE PRECISION PWR1,PWR2
  ISN 0004          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                   *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
  ISN 0005          COMMON/MIN/SF,A0,A1,A2
  ISN 0006          W = TR(1)
  ISN 0007          GO TO (10,20,30,40,50),NPT
  ISN 0008       10 CONTINUE
  ISN 0009          A0=10.0**6.96*DF(1)**.0000038*C(6)**(-.00015)*T(1)**.0000036*
                   *C(5)**.0000062
  ISN 0010          A1=10.0**9.21*C(1)**(-2.99)*DF(1)**.8*DF(3)**(-.88)*T(1)**(-1.17)*
                   *W**(-.33)*C(3)**(-.89)
  ISN 0011          A2=10.0**6.958
  ISN 0012          SF=10.0**2.397
  ISN 0013          GO TO 60
  ISN 0014       20 CONTINUE
  ISN 0015          A0=10.0**5.2*C(3)**.00076*C(4)**(-.0011)*S(3)**.0012*S(4)**(-.01)*
                   *DF(3)**.0004*T(1)**.0017
  ISN 0016          A1=10.0**.968
  ISN 0017          A2=10.0**3.74*DT(1)**3.73*C(5)**(-1.22)*S(3)**1.93*TR(2)**(-1.41)
                   **TR(1)**1.11
  ISN 0018          SF=10.0**1.572
  ISN 0019          GO TO 60
  ISN 0020       30 CONTINUE
  ISN 0021          A0=10.0**4.86*C(3)**(-.00006)*C(5)**(-.00031)*TR(1)**(-.000063)*
                   *DF(1)**.00016*C(2)**.00052
  ISN 0022          A1=10.0**(-.35)*DF(3)**(-.57)*DT(1)**(-2.42)*C(3)**.56*C(5)**.4*
                   *C(4)**(-.39)*TR(2)**(-.064)
  ISN 0023          A2=10.0**1.05*C(2)**.67*C(1)**.78*DF(3)**.23*TR(2)**(-.24)*
                   *S(3)**(-1.46)*S(2)**2.44
  ISN 0024          SF=10.0**(-.00921)
  ISN 0025          GO TO 60
  ISN 0026       40 CONTINUE
  ISN 0027          A0=10.0**5.246
  ISN 0028          A1=10.0**1.199
  ISN 0029          A2=10.0**5.132
  ISN 0030          SF=10.0**1.248
  ISN 0031          GO TO 60
  ISN 0032       50 CONTINUE
  ISN 0033          A0=10.0**4.576
  ISN 0034          A1=10.0**.51
  ISN 0035          A2=10.0**3.43
  ISN 0036          SF=10.0**.45
  ISN 0037       60 CONTINUE
  ISN 0038          CALL MINIMU(NPT,WAREA,WSEVER)
  ISN 0039          RETURN
  ISN 0040          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       39, PROGRAM SIZE =      3336, SUBPROGRAM NAME =  RAVA
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 82.147/20.17.44        PAGE   2
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                                  128K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                     OS/360  FORTRAN H EXTENDED           DATE 82.147/20.17.49       PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE  FAPM(NPT,TWAREA,WSEVER)
   ISN 0003          DOUBLE PRECISION PWR1,PWR2
   ISN 0004          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                    *,PT(5),AC(5),AA,SCT(5),XMNW18(10)  ,XKTO
   ISN 0005          COMMON/MIN/SF,A0,A1,A2
   ISN 0006          W = TR(1)
   ISN 0007          GO TO (10,20,30,40,50),NPT
   ISN 0008       10 CONTINUE
   ISN 0009          A1=10.0**(-1.37)*C(3)**.59*S(1)**2.13*C(1)**2.03*TR(1)**(-.59)*
                    *S(2)**(-1.35)*TR(2)**.6
   ISN 0010          A2=0
   ISN 0011          SF=10.0**(-1.275)
   ISN 0012          GO TO 60
   ISN 0013       20 CONTINUE
   ISN 0014          A1=10.0**.104
   ISN 0015          A2=0.
   ISN 0016          SF=10.0**(-1.688)
   ISN 0017          GO TO 60
   ISN 0018       30 CONTINUE
   ISN 0019          A1=10.0**1.684
   ISN 0020          A2=10.0**.24
   ISN 0021          SF=10.0**(-1.857)
   ISN 0022          GO TO 60
   ISN 0023       40 CONTINUE
   ISN 0024          A1=10.0**1.4945
   ISN 0025          A2=10.0**.114
   ISN 0026          SF=10.0**(-1.595)
   ISN 0027          GO TO 60
   ISN 0028       50 CONTINUE
   ISN 0029          A1=10.0**.601
   ISN 0030          A2=0.
   ISN 0031          SF=10.0**(-.891)
   ISN 0032       60 CONTINUE
   ISN 0033           A0 = 9999999.
   ISN 0034          CALL MINIMU(NPT,WAREA,WSEVER)
   ISN 0035          RETURN
   ISN 0036          END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       35, PROGRAM SIZE =      1314, SUBPROGRAM NAME =  FAPM

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                               136K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE MINIMU(NPT,WAREA,WSEVER)
   ISN 0003            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0004            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0005            COMMON/MIN/SF,AO,A1,A2
   ISN 0006            XN = 1.
   ISN 0007            IF(SF.LE.SCT(NPT)) SF = 1.009*SCT(NPT)
   ISN 0009            WAREA = (-AO/ALOG(AC(NPT)))**1./XN
   ISN 0010            IF(A1.GT.89.)  A1 = 10.
   ISN 0012            IF(A1.LE.10.) A1 = 10.
   ISN 0014            XX = -1.*ALOG(SCT(NPT)/SF)
   ISN 0015            IF(XX.LE.A1) GO TO 888
   ISN 0017            WSEVER = (-A2/A1+ALOG(SCT(NPT)/SF))**1./XN
   ISN 0018            GO TO 333
   ISN 0019        888 WSEVER = (-A2/(-A1))**1./XN
   ISN 0020        333 IF(WSEVER.GE.9999999.) WSEVER = 9999999.
   ISN 0022            IF(WAREA.GE.9999999.) WAREA = 9999999.
   ISN 0024            IF(WSEVER.LE.TR(NPT)) WSEVER = TR(NPT)*1000.
   ISN 0026            IF(WAREA.LE.TR(NPT)) WAREA = TR(NPT)*1000.
   ISN 0028            AA = AMIN1(WAREA,WSEVER)
   ISN 0029            RETURN
   ISN 0030            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =       29, PROGRAM SIZE =      1018, SUBPROGRAM NAME =MINIMU

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                        136K BYTES OF CORE NOT USED
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LEVEL 2.3.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED              DATE 82.147/20.17.53         PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002            SUBROUTINE PSIT(P,PF,W,XKT)
   ISN 0003            COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0004            DOUBLE PRECISION PWR
   ISN 0005            COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                      *,PT(5),AC(5),AA,SCT(5),XMNW18(10)  ,XKTO
   ISN 0006            COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0007            W = TR(1)*0.1
   ISN 0008            P=PI(NPT)
   ISN 0009            GO TO (10,20,30,40,50),NPT
   ISN 0010         10 CONTINUE
   ISN 0011            XKT=89.15+.00367*T(1)**.99*DT(1)**(-2.83)*S(1)**2.1*DF(2)**.85
   ISN 0012            PF=3.663+1236.1*S(2)**(-.086)*C(6)**.3*C(3)**.12*C(4)**(-.21)
                      **C(2)**(-.22)*DT(1)**.25*C(1)**(-3.13)*C(5)**.31
   ISN 0013            GO TO 60
   ISN 0014         20 CONTINUE
   ISN 0015            XKT=92.83+.27*10.0**(-12.0)*S(2)**1.64*DF(1)**(-.46)*C(1)**7.97
                      **DT(1)**(-1.45)*C(5)**(-3.38)*TR(NPT)**(-.25)*T(1)**1.09
   ISN 0016            PF=3.667+117.44*S(2)**(-.08)*DF(2)**(-.034)*C(1)**(-1.67)*C(4)**
                      *(-.085)*DT(1)**.49*T(1)**(-.059)*C(5)**.25
   ISN 0017            GO TO 60
   ISN 0018         30 CONTINUE
   ISN 0019            XKT=91.51+.6837*DF(1)**.23*C(2)**.38*C(4)**(-.18)*TR(NPT)**(-.15)*
                      *T(1)**1.45
   ISN 0020            PF=2.367+15.598*S(3)**(-.018)*C(1)**(-.55)*C(3)**(-.24)*S(1)**
                      *(-.17)*T(1)**(-.085)*TR(NPT)**.03
   ISN 0021            GO TO 60
   ISN 0022         40 CONTINUE
   ISN 0023            XKT=81.84+5.052*DF(2)**(-.32)*DF(1)**1.4*C(2)**.89*T(1)**.25*
                      *S(1)**(-1.74)
   ISN 0024            PF=3.719+3.327*C(1)**(-.38)*C(4)**.033*S(3)**(-.09)*C(3)**
                      *(-.061)*S(4)**.071*S(2)**.16*S(1)**(-.017)*T(1)**(-.075)
   ISN 0025            GO TO 60
   ISN 0026         50 CONTINUE
   ISN 0027            XKT=-.0737+231.63*T(1)**1.26*S(4)**.3*TR(NPT)**(-.47)
   ISN 0028            PF=.00804+7.6131*DF(2)**(-.15)*T(1)**.021*C(5)**(-1.37)
   ISN 0029        60  CONTINUE
   ISN 0030            PFO=PF
   ISN 0031            RETURN
   ISN 0032            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      31, PROGRAM SIZE =      3838, SUBPROGRAM NAME =  PSIT

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   120K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(O),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

  ISN 0002          SUBROUTINE RUSIAN (DPTEMP,DMDRU,NLAY,NPT,NRU,NLH)
              C
              C    E REPRESENTS THE ELASTICITY MODULI FOR THE REPRESENTATIVE
              C     SECTIONS
              C
              C
  ISN 0003          IMPLICIT REAL*8 (A-H,O-Z)
  ISN 0004          REAL*8 MTERM, NTERM
  ISN 0005          DIMENSION X(5), EX(5) ,DP(5), R(6) ,E(6) ,WHAT(5) ,DPTEMP(5)
  ISN 0006          IF(NPT.NE.3.OR.NRU.NE.1) GO TO 112
  ISN 0008          E(1)=65000.0
  ISN 0009          E(2)=20000.0
  ISN 0010          E(3)=12000.0
  ISN 0011          E(4)=5000.0
  ISN 0012    112   IF(NPT.NE.3.OR.NRU.NE.2) GO TO 120
  ISN 0014          E(1)=65000.0
  ISN 0015          E(2)=20000.0
  ISN 0016          E(3)=12800.0
  ISN 0017          E(4)=5100.0
  ISN 0018    120   IF(NPT.NE.1.OR.NRU.NE.1.OR.NLH.NE.1)GO TO 30
  ISN 0020          E(1)=300000.0
  ISN 0021          E(2)=80000.0
  ISN 0022          E(3)=15000.0
  ISN 0023          E(4)=6000.0
  ISN 0024    30    IF(NPT.NE.1.OR.NRU.NE.1.OR.NLH.NE.2) GO TO 40
  ISN 0026          E(1)=305000.
  ISN 0027          E(2)=100000.0
  ISN 0028          E(3)=16500.0
  ISN 0029          E(4)=6000.0
  ISN 0030    40    IF(NPT.NE.1.OR.NRU.NE.2.OR.NLH.NE.1) GO TO 50
  ISN 0032          E(1)=300000.
  ISN 0033          E(2)= 85000.0
  ISN 0034          E(3)=22000.0
  ISN 0035          E(4)=16400.0
  ISN 0036          E(5)=6000.
  ISN 0037    50    IF(NPT.NE.1.OR.NRU.NE.2.OR.NLH.NE.2) GO TO 60
  ISN 0039          E(1)=325000.
  ISN 0040          E(2)= 95000.0
  ISN 0041          E(3)=35000.0
  ISN 0042          E(4)=18500.0
  ISN 0043          E(5)=6000.
  ISN 0044    60    IF(NPT.NE.4.OR.NRU.NE.1.OR.NLH.NE.1) GO TO 70
  ISN 0046          E(1)=325000.
  ISN 0047          E(2)=130000.0
  ISN 0048          E(3)=90000.0
  ISN 0049          E(4)=16800.0
  ISN 0050          E(5)=6000.0
  ISN 0051    70    IF(NPT.NE.4.OR.NRU.NE.1.OR.NLH.NE.2) GO TO 80
  ISN 0053          E(1)=325000.
  ISN 0054          E(2)=130000.0
  ISN 0055          E(3)=90000.0
  ISN 0056          E(4)=18500.0
  ISN 0057          E(5)=6000.0
```

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ISN 0058      80    IF(NPT.NE.4.OR.NRU.NE.2.OR.NLH.NE.1) GO TO 90
ISN 0060            E(1)=325000.
ISN 0061            E(2)=130000.0
ISN 0062            E(3)=90000.0
ISN 0063            E(4)=38000.0
ISN 0064            E(5)=19000.0
ISN 0065            E(6)=6000.
ISN 0066      90    IF(NPT.NE.4.OR.NRU.NE.2.OR.NLH.NE.2) GO TO 100
ISN 0068            E(1)=325000.
ISN 0069            E(2)=150000.0
ISN 0070            E(3)=115000.0
ISN 0071            E(4)=42000.0
ISN 0072            E(5)=22000.0
ISN 0073            E(6)=6000.
ISN 0074       100  CONTINUE
ISN 0075            DO 915 K=1,5
ISN 0076             RTEMP =10.**2.+(12*(K-1))**2.
ISN 0077      915    R(K)=DSQRT(RTEMP)
              C
ISN 0078            DO 916 K=1,NLAY
ISN 0079      916   DP(K)=DPTEMP(K)
ISN 0080            IPVMT = 3
ISN 0081            NW = 5
ISN 0082            LEQ = 0
ISN 0083            NOL = NLAY
              C
ISN 0084            DO 5 K = 1, NLAY
ISN 0085          5 X(K) = E(K)/1000000.
              C
ISN 0086            IF( DP(  NOL-1) .LE. 10.0 ) LEQ = 1
ISN 0088            NC = NOL
ISN 0089            IF( LEQ .EQ. 1 ) NC = NOL - 1
ISN 0091            IF( LEQ .EQ. 1 ) X(NOL-1) = X(NOL)
              C
ISN 0093         53 BTERM = 10.0 ** (-0.05071) * DP(1) ** 0.10148
ISN 0094            NTERM = 10.0 ** (-0.50233) * DP(1) ** 0.087879
ISN 0095            CTERM = 10.0 ** (-0.060039) * DP(1) ** 0.0095198
ISN 0096            MTERM = 0.704 - 0.026 * DP(1)
ISN 0097            HTERM = 10.0 ** 1.8631 * DP(1) ** (-0.0038499)
              C
ISN 0098            TMB = 2.0 * MTERM * BTERM
              C
ISN 0099            NL = NLAY
ISN 0100            EI = X(NC)
ISN 0101            N1 = NL - 1
ISN 0102            SUM = 0.0
ISN 0103            DO 10 I = 1, N1
ISN 0104         10 SUM = SUM + DP(I)
ISN 0105            HS = HTERM - SUM
ISN 0106            DP(   NL) = HS
              C
ISN 0107            NT = NC - 1
              C
ISN 0108            DO 11 I = 1, NT
ISN 0109         11 EX(I) = X(I)
ISN 0110            EX(NL) = X(NC)
ISN 0111            EXT = EX(NL) * 1000000.0
ISN 0112            IF( LEQ .EQ. 0 ) GO TO 14
```

```
                C
  ISN 0114            GO TO ( 12, 12, 13, 13, 12, 12 ), IPVMT
  ISN 0115            GO TO 14
                C
  ISN 0116         12 EX(NL - 1) = EX(NL) * (1.0 + 7.18 * DLOG10( DP(    NC)) - 1.56 *
                     = ( DLOG10( EXT     )* DLOG10( DP(    NC)) ))
  ISN 0117            GO TO 14
                C
  ISN 0118         13 EX(NL - 1) = EX(NL) * (1.0 + 10.52 * DLOG10( DP(    NC)) - 2.10 *
                     = ( DLOG10( EXT    ) * DLOG10( DP(    NC))  ))
                C
  ISN 0119         14 CONTINUE
                C
  ISN 0120            HPR = 0.0
  ISN 0121            DO 15 I = 1, NL
  ISN 0122            XNUM = EX(I)/EI
  ISN 0123            HPR = HPR + (  XNUM      ** NTERM) * DP(    I)
  ISN 0124         15 CONTINUE
                C
                C
  ISN 0125            PHIALF = TMB * ((TMB + 1.0)/(TMB - 1.0)) ** 0.5
  ISN 0126            ALPHA = PHIALF/HPR
  ISN 0127            TTM = 2.0 * MTERM
                C
  ISN 0128            DO 20 I = 1, NW
  ISN 0129            ARG = ALPHA * R(I)
                C
  ISN 0130            WHAT(    I) = 0.47746 * (CTERM/( EI *1000000.0)) * (1000.0/HPR) *
                     = (TTM + 1.0) * BESJO( ARG )
                C
  ISN 0131         20 CONTINUE
  ISN 0132            DMDRU=WHAT(1)
  ISN 0133            RETURN
  ISN 0134            END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      133, PROGRAM SIZE =      4166, SUBPROGRAM NAME =RUSIAN

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                      116K BYTES OF CORE NOT USED
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REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002          SUBROUTINE TMECH  (TOTEAL)
   ISN 0003          COMMON/HOR/A(10),B(10),C(10),DT(10),DF(10),S(10),T(10),TR(5),PI(5)
                    *,PT(5),AC(5),AA,SCT(5),XMNW18(10) ,XKTO
   ISN 0004          COMMON /EXTRA/ TPE,PFO,MNOVTK,MXOVTK,NIS
   ISN 0005          COMMON /EXPVT/ NPT, THICK(4), MTYPE(4), NLAY, IP, IF, IR, IC
   ISN 0006          COMMON /PSI/PF,PICON, PTERM, PIOV, PTOV
   ISN 0007          COMMON /MECH/XKT,NRU,NLH,ND,NDEL
   ISN 0008          REAL AO1(5,2,2)/20*0.0/,A11(5,2,2)/20*0.0/,SFF(5,2,2)/20*0.0/
   ISN 0009          REAL A22(5,2,2)/20*0.0/,W(5,2,2)/20*0.0/
   ISN 0010          W(1,1,1)=375000.
   ISN 0011          W(1,1,2)=3750000.
   ISN 0012          W(1,2,1)=937500.
   ISN 0013          W(1,2,2)=9375000.
   ISN 0014          W(3,1,1)=25000.
   ISN 0015          W(3,1,2)=25000.
   ISN 0016          W(3,2,1)=62500.
   ISN 0017          W(3,2,2)=62500.
   ISN 0018          W(4,1,1)=325000.
   ISN 0019          W(4,1,2)=3250000.
   ISN 0020          W(4,2,1)=812500.
   ISN 0021          W(4,2,2)=8125000.
   ISN 0022          AO1(1,1,1)=10.0**5.32
   ISN 0023          AO1(1,1,2)=10.0**6.32
   ISN 0024          AO1(1,2,1)=10.0**5.71
   ISN 0025          AO1(1,2,2)=10.0**6.72
   ISN 0026          AO1(4,1,1)=10.0**5.26
   ISN 0027          AO1(4,1,2)=10.0**6.26
   ISN 0028          AO1(4,2,1)=10.0**5.65
   ISN 0029          AO1(4,2,2)=10.0**6.65
   ISN 0030          AO1(3,1,1)=10.0**4.14
   ISN 0031          AO1(3,1,2)=10.0**4.14
   ISN 0032          AO1(3,2,1)=10.0**4.54
   ISN 0033          AO1(3,2,2)=10.0**4.54
   ISN 0034          A11(1,1,1)=10.0**0.9
   ISN 0035          SFF(1,1,1)=10.0**3.1496
   ISN 0036          A22(1,1,1)=10.0**2.8
   ISN 0037          A11(1,1,2)=10.0**0.9
   ISN 0038          SFF(1,1,2)=10.0**3.1496
   ISN 0039          A22(1,1,2)=10.0**3.8
   ISN 0040          A11(1,2,1)=10.0**0.95
   ISN 0041          SFF(1,2,1)=10**3.5769
   ISN 0042          A22(1,2,1)=10.0**4.1
   ISN 0043          A11(1,2,2)=10.0**0.95
   ISN 0044          SFF(1,2,2)=10.0**3.5769
   ISN 0045          A22(1,2,2)=10.0**5.09
   ISN 0046          A11(4,1,1)=10.0**0.8
   ISN 0047          SFF(4,1,1)=10.0**2.4394
   ISN 0048          A22(4,1,1)=10.0**2.1
   ISN 0049          A11(4,1,2)=10.0**0.8
   ISN 0050          SFF(4,1,2)=10.0**2.4394
   ISN 0051          A22(4,1,2)=10.0**3.11
   ISN 0052          A11(4,2,1)=10.0**0.8
   ISN 0053          SFF(4,2,1)=10.0**2.44
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```
   ISN 0054           A22(4,2,1)=10.0**3.1
   ISN 0055           A11(4,2,2)=10.0**0.80
   ISN 0056           SFF(4,2,2)=10.0**2.44
   ISN 0057           A22(4,2,2)=10.0**4.09
   ISN 0058           A11(3,1,1)=10.0**0.6
   ISN 0059           A11(3,1,2)=10.0**0.6
   ISN 0060           SFF(3,1,1)=10.0**1.4293
   ISN 0061           SFF(3,1,2)=10.0**1.4293
   ISN 0062           A22(3,1,1)=10.0**1.8
   ISN 0063           A22(3,1,2)=10.0**1.8
   ISN 0064           A11(3,2,1)=10.0**0.6
   ISN 0065           A11(3,2,2)=10.0**0.6
   ISN 0066           SFF(3,2,1)=10.0**1.429
   ISN 0067           SFF(3,2,2)=10.0**1.429
   ISN 0068           A22(3,2,1)=10.0**2.1
   ISN 0069           A22(3,2,2)=10.0**2.1
   ISN 0070           IF(PF.GT.PTERM)GO TO 1
   ISN 0072           TOTEAL=W(NPT,NRU,NLH)
   ISN 0073           XKT=-1.0*ALOG((PICON-PTERM)/(PICON-PF))*TOTEAL
   ISN 0074           RETURN
   ISN 0075         1 IF(ND.EQ.1)GOTO 5
   ISN 0077           TOTEAL=A22(NPT,NRU,NLH)/(ALOG(SFF(NPT,NRU,NLH))-A11(NPT,NRU,NLH)
                     1-ALOG(.5))
   ISN 0078           GO TO 3
   ISN 0079         5 TOTEAL=A01(NPT,NRU,NLH)/(-1.0*ALOG(0.5))
   ISN 0080         3 CONTINUE
   ISN 0081           XKT=-1.0*ALOG((PICON-PTERM)/(PICON-PTERM+0.5))*W(NPT,NRU,NLH)
   ISN 0082           RETURN
   ISN 0083           END

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      82, PROGRAM SIZE =     3140, SUBPROGRAM NAME = TMECH

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                    116K BYTES OF CORE NOT USED
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 LEVEL 2.3.0 (JUNE 78)                              OS/360  FORTRAN H EXTENDED            DATE 82.147/20.18.03         PAGE    1

REQUESTED OPTIONS: NODECK,NOLIST,OPT(0),NODUMP

OPTIONS IN EFFECT: NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

   ISN 0002              FUNCTION BESJO ( X )
   ISN 0003              IMPLICIT REAL*8 (A-H, O-Z)
                   C     A FUNCTION TO CALCULATE BESSEL FUNCTION JO(X) USING POLYNOMIAL     BES   20
                   C     APPROXIMATION - REFERENCE HANDBOOK OF MATH. FUNCTIONS, BUREAU OF   BES   30
                   C     STANDARDS, PAGES 369-370                                           BES   40
   ISN 0004              ASSIGN 2 TO JOJ1                                                   BES   60
   ISN 0005         1    CONTINUE                                                           BES   70
   ISN 0006              X3 = X/3.0                                                         BES   80
   ISN 0007              IF( X.GT. 3.0) X3 = 3.0/ X                                         BES   90
   ISN 0009              X32= X3*X3                                                         BES  100
   ISN 0010              X33=X32*X3                                                         BES  110
   ISN 0011              X34=X32*X32                                                        BES  120
   ISN 0012              X35=X32*X33                                                        BES  130
   ISN 0013              X36=X33*X33                                                        BES  140
   ISN 0014              GO TO JOJ1,(2,10)                                                  BES  150
   ISN 0015            2 IF(DABS( X ) .LE. 3.3 ) GO TO 3
   ISN 0017              X1 =    X    - 0.7853982  -0.04166397*X3 - 0.3954E-04 * X32 +      BES  200
                        +   0.262573E-02*X33  -  0.54125E-03* X34  -  0.29333E-03 * X35  + BES  210
                        +   0.13558E-03 * X36                                               BES  220
   ISN 0018              BESJO=((.7978846 -.77E-6   * X3  -  0.552740E-02 * X32  -          BES  170
                        -   0.9512E-04 * X33  +  0.137237E-02 * X34  - 0.72805E-03 * X35  +BES  180
                        +   0.14476E-03 * X36 )  /DSQRT(X)  )  * DCOS(X1  )                 BES  190
   ISN 0019              RETURN                                                             BES  230
   ISN 0020         3    BES JO= 1.0  -  2.2499997 * X32  +  1.2656208 * X34  -             BES  240
                        -   0.3163866 * X36  +  0.0444479*(X34*X34)-0.0039444 *(X35*X35) + BES  250
                        *   0.000210* (X36*X36)                                             BES  260
   ISN 0021              RETURN                                                             BES  270
   ISN 0022              ENTRY BES J1(X)                                                    BES  280
                   C     BESSEL FUNCTION J1 WHERE X IS BETWEEN -3 AND + INFINITY.           BES  290
   ISN 0023              ASSIGN 10 TO JOJ1                                                  BES  320
   ISN 0024              GO TO 1                                                            BES  360
   ISN 0025           10 IF ( DABS (X) .LT. 3.0    )  GO   TO  30
   ISN 0027              X1 =            X - 2.3561945  + 0.1249961  * X3 + 0.565E-4 * X32 -
                        ¢ 0.637879E-02 * X33 + 0.74348E-03 * X34 + 0.79824E-03 * X35
                        ' - 0.29166E-03 * X36
   ISN 0028              BESJ1 = DCOS( X1  )  *
                        =                        ( 0.79788456 + 0.156E-05 * X3
                        1   + 0.01659667 *  X32  + 0.17105E-03 * X33  - 0.249511E-02 * X34 BES  340
                        2   + 0.113653E-02 * X35  - 0.20033E-03 * X36 )  / DSQRT(X)         BES  350
   ISN 0029              RETURN                                                             BES  400
   ISN 0030        30    BES J1 =  X *  ( 0.5  - 0.5624999  * X32  + 0.2109357  * X34  -    BES  410
                        1   0.03954289 * X36  + 0.443319E-02 * (X34 * X34)  -  0.31761E-03 BES  420
                        2   * (X35*X35)  +  0.1109E-04* (X36*X36)  )                        BES  430
   ISN 0031              RETURN                                                             BES  440
   ISN 0032              END                                                                BES  450

*OPTIONS IN EFFECT*NAME(MAIN) NOOPTIMIZE LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT NOMAP NOFORMAT GOSTMT NOXREF ALC NOANSF NOTERM IBM FLAG(I)

*STATISTICS*     SOURCE STATEMENTS =      31, PROGRAM SIZE =      1934, SUBPROGRAM NAME = BESJO

*STATISTICS*  NO  DIAGNOSTICS GENERATED
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APPENDIX C

SAMPLE PROBLEM OUTPUT

```
RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST  1981


RUN PARAMETERS          18    0      3.35       16.00       0.12       0.09       0.0
SYSTEM TITLE             0    0      0.0         0.0        0.0        0.0        0.0
INTERSTATE FLEX PAVEMENTS DISTRICT 17
 TEXAS TRANSPORTATION INSTITUTE
 SAMPLE RUN FOR FLEXIBLE PAVEMENTS
FLEXIBLE                 0    0     12.00        0.0        0.0        3.00       3.00
INTFLX A  INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF
   17    1    1    1    2   10    0    1    6
ACP    4.00.0  AGB    12.00.0   LTS    0.00.0         0.00.0
AGE DISTRIBUTION        30    1      0.0         0.0        0.0        0.0        0.0
     0.0     0.0     0.0     0.0     0.0     0.0    39.0     0.0     0.0     0.0     0.0     0.0     0.0     9.0     0.0
     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
    190.00    173.00    157.00    143.00    135.00    132.00    125.00     91.00
     80.00     73.00     67.00     57.00     51.00     47.00     44.00     41.00
     38.00     36.00     34.00     31.00     29.00     27.00     26.00     24.00
     22.00     20.00     19.00     18.00     16.00     15.00
      3.00      3.00      3.00      3.00      3.00      3.00      3.00      3.00
      3.00      3.00      3.00      3.00      3.00      3.00      3.00      3.00
      3.00      3.00      3.00      3.00      3.00      3.00      3.00      3.00
      3.00      3.00      3.00      3.00      3.00      3.00
TRUCK TYPE               4    0      0.0         0.0        0.0        0.0        0.0
2D        3A        3-S2      2-S1-2
 1 0 0 0   0 1 0 0   0 2 0 0   4 0 0 0
  1   3.77  0.58 18.22  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.11
  2   3.83  0.58 18.29  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.25
  3   3.94  0.58 18.38  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.44
  4   3.98  0.57 18.46  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.56
  5   4.06  0.57 18.55  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.73
  6   4.12  0.57 18.53  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.77
  7   4.14  0.57 18.61  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.89
  8   4.23  0.56 18.59  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.82
  9   4.27  0.56 18.67  0.55  0.0   0.0   0.0   0.0   0.0   0.0  24.05
 10   4.33  0.56 18.65  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.10
 11   4.37  0.56 18.64  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.15
 12   4.43  0.55 18.63  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.19
 13   4.47  0.55 18.61  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.21
 14   4.50  0.55 18.59  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.22
 15   4.54  0.55 18.57  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.24
 16   4.60  0.54 18.55  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.27
 17   4.65  0.54 18.54  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.30
 18   4.69  0.54 18.52  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.34
LOAD LIMITS              0    0      0.0         0.0        0.0        0.0        0.0
     80.00     20.00     34.00     56.00
    120.00     22.40     36.00     56.00
     13.       13.       12.        8.
     16.       16.       16.       16.
SINGLE AXLES            11    0      3.00        0.0        0.0        0.0        0.0
         3.       1.       0.       0.       0.
         7.     566.      26.      71.      47.
         8.      70.      20.     329.      18.
        12.      92.      33.    1459.     126.
        16.      59.       8.      24.     101.
        18.      30.       0.       2.      40.
        19.       9.       0.       0.      12.
```

20.	31.	0.	0.	13.				
22.	10.	0.	0.	13.				
24.	0.	0.	0.	3.				
26.	0.	0.	0.	2.				
TANDEM AXLES		15	0	6.00	0.0	0.0	0.0	0.0
6.	0.	0.	0.	0.				
12.	0.	38.	568.	0.				
18.	0.	18.	552.	0.				
24.	0.	15.	518.	0.				
30.	0.	9.	815.	0.				
32.	0.	2.	428.	0.				
33.	0.	1.	88.	0.				
34.	0.	0.	244.	0.				
36.	0.	0.	246.	0.				
38.	0.	3.	133.	0.				
40.	0.	1.	70.	0.				
42.	0.	1.	26.	0.				
44.	0.	0.	15.	0.				
46.	0.	0.	14.	0.				
50.	0.	0.	3.	0.				
GVW		28	0	10.00	0.0	0.0	0.0	0.0
10.	130.	0.	0.	0.				
14.	100.	5.	0.	0.				
20.	86.	34.	0.	0.				
22.	33.	4.	0.	0.				
24.	26.	5.	5.	0.				
26.	33.	5.	24.	0.				
28.	19.	3.	54.	1.				
30.	6.	3.	92.	4.				
32.	1.	9.	82.	1.				
34.	0.	3.	74.	2.				
36.	0.	5.	54.	3.				
38.	0.	1.	41.	0.				
40.	0.	2.	45.	3.				
45.	0.	2.	91.	1.				
50.	0.	5.	96.	4.				
55.	0.	0.	112.	7.				
60.	0.	1.	126.	6.				
65.	0.	0.	154.	7.				
70.	0.	0.	221.	8.				
72.	0.	0.	112.	2.				
75.	0.	0.	159.	9.				
80.	0.	0.	171.	8.				
85.	0.	0.	99.	7.				
90.	0.	0.	31.	0.				
95.	0.	0.	9.	1.				
100.	0.	0.	7.	0.				
105.	0.	0.	3.	0.				
110.	0.	0.	0.	0.				
EMPTY		13	0	4.00	0.0	0.0	0.0	0.0
6.	14.	0.	0.	0.				
8.	78.	0.	0.	0.				
10.	143.	4.	0.	0.				
12.	107.	10.	0.	0.				
14.	75.	26.	0.	0.				
16.	50.	47.	2.	0.				
18.	9.	35.	4.	0.				
20.	7.	14.	19.	0.				
25.	4.	23.	290.	3.				
30.	0.	6.	262.	10.				
35.	0.	0.	120.	4.				

```
      40.      0.     0.     24.      0.
      45.      0.     0.      4.      2.
PERFORMANCE             0      0     4.70        1.50        4.70        20.00        0.0
    0.0
OVERLAY                 2      3     0.0         0.0         0.0         0.0          0.0
    95.00      4.75     0.25        66.00       0.50     0.0       0.0
MODEL MAINT             1      0     0.0         0.0         0.0         0.0          0.0
     3.47      0.25   414.00
  1000.00      3.86     8.75        12.90
OLD SECTIONS            1      0  1800.00       10.00        0.0         0.0          0.0
OUTPUT                  3      0     0.0         0.0         0.0         0.0          0.0
EXECUTE                 0      0     0.0         0.0         0.0         0.0          0.0
```

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

INTERSTATE FLEX PAVEMENTS DISTRICT 17
TEXAS TRANSPORTATION INSTITUTE
SAMPLE RUN FOR FLEXIBLE PAVEMENTS

INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

RUN PARAMETERS

LENGTH OF ANALYSIS PERIOD	18 YEARS
ANNUAL GROWTH RATE OF 18 KIP EAL	3.35 PERCENT/YEAR
ANNUAL INTEREST RATE FOR PRESENT WORTH CALCULATIONS	16.00 PERCENT/YEAR

NUMBER OF 18-KIP ESAL UNDER PROPOSED REGULATIONS
DERIVED FROM 18-KIP ESAL UNDER PRESENT REGULATIONS
AND THE ASSUMPTION OF EQUAL PAYLOAD

FLEXIBLE STRUCTURE

NUMBER OF LAYERS	2
LANE WIDTH	12.00 FEET
DESIGN SOIL SUPPORT	0.0
REGIONAL FACTOR	0.0

MATERIALS

LAYER NUMBER	THICKNESS (IN.)	STRUCTURAL COEFFICIENT	MATERIAL CODE	
1	4.00	0.440	ACP	ASPHALT SURFACE
2	12.00	0.140	AGB	AGGREGATE BASE

PERFORMANCE

PSI INITIAL CONSTANT	4.70
TERMINAL PSI	1.50
PSI AFTER OVERLAY	4.70
AVERAGE AGE AT TERMINAL PSI FOR EXISTING DESIGN	13.00 YEARS
OVERLAY DESIGN LIFE	20.00 YEARS

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

AGE DISTRIBUTION

LOSS RATE FACTOR FOR MILEAGE IN POTTS - 1.80

AGE	LANE MILES	VALUE	LOSS RATE	AGE	LANE MILES	VALUE	LOSS RATE	AGE	LANE MILES	VALUE	LOSS RATE
1	0.0	190.	3.00	11	0.0	67.	3.00	21	0.0	29.	3.00
2	0.0	173.	3.00	12	0.0	57.	3.00	22	0.0	27.	3.00
3	0.0	157.	3.00	13	0.0	51.	3.00	23	0.0	26.	3.00
4	0.0	143.	3.00	14	9.0	47.	3.00	24	0.0	24.	3.00
5	0.0	135.	3.00	15	0.0	44.	3.00	25	0.0	22.	3.00
6	0.0	132.	3.00	16	0.0	41.	3.00				
7	39.0	125.	3.00	17	0.0	38.	3.00				
8	0.0	91.	3.00	18	0.0	36.	3.00				
9	0.0	80.	3.00	19	0.0	34.	3.00				
10	0.0	73.	3.00	20	0.0	31.	3.00				

VALUE IN THOUSANDS OF DOLLARS

LOSS RATE IN PERCENT PER YEAR

OVERLAY

PERCENT OF PAVED SHOULDERS ----------- 95.00 PERCENT
AVERAGE PAVED SHOULDER WIDTH/LANE ---- 4.75 FEET
AVERAGE GRANULAR SHOULDER WIDTH/LANE - 0.25 FEET
UNIT COST OF ACP -------------------- 66.00 $/CY
UNIT COST OF GRANULAR ---------------- 0.50 $/SY/IN.

MODEL MAINTENANCE

ACCELERATED MAINTENANCE - YES

UNIT COSTS OF MAINTENANCE

1000.00 PER ONE DISTRESS

DISTRICT 17

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

MAINTENANCE COSTS PER LANE-MILE PER YEAR

YEAR	FLEXIBLE	RIGID	COMPOSITE
1	2.62	52.50	1.74
2	6.20	205.28	4.11
3	14.66	458.37	9.72
4	34.61	811.75	22.93
5	81.32	1265.43	53.89
6	189.14	1819.41	125.35
7	429.78	2473.68	284.82
8	928.77	3228.25	615.50
9	1822.12	4083.12	1207.52
10	3068.50	5038.28	2033.50
11	4314.88	6093.75	2859.48
12	5208.23	7249.51	3451.50
13	5707.21	5444.04	3782.18
14	5947.86	7174.64	3941.65
15	6055.68	8929.77	4013.11
16	6102.39	25.59	4044.07
17	6122.34	100.08	4057.28
18	6130.80	223.45	4062.89
19	6134.38	395.73	4065.27
20	6135.89	616.90	4066.27
21	6136.54	886.96	4066.69
22	6136.80	1205.92	4066.87
23	6136.91	1573.77	4066.95
24	6136.96	1990.52	4066.98

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

OLD SECTIONS

MAINTENANCE COST (DOLLARS/LANE MILE/YEAR) FOR PAVEMENTS OLDER THAN TERMINAL SERVICEABILITY ------------------------------	1800.00
PERCENT OF TOTAL LANE MILES IN POTTS AT	
BEGINNING OF ANALYSIS PERIOD (CALCULATED) --------------	13.88
END OF ANALYSIS PERIOD (INPUT TARGET VALUE) ------------	10.00
PERCENT OF TOTAL LANE MILES NEVER OVERLAID ------------------	0.0

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

TRUCK TYPES PRESENT
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TYPE	2D	3A	3-S2	2-S1-2	TOTAL
AXLE CODE	1000	0100	0200	4000	
YEAR	PERCENT OF ALL VEHICLES				
1	3.77	0.58	18.22	0.55	23.11
2	3.83	0.58	18.29	0.55	23.25
3	3.94	0.58	18.38	0.55	23.44
4	3.98	0.57	18.46	0.55	23.56
5	4.06	0.57	18.55	0.55	23.73
6	4.12	0.57	18.53	0.55	23.77
7	4.14	0.57	18.61	0.55	23.89
8	4.23	0.56	18.59	0.55	23.82
9	4.27	0.56	18.67	0.55	24.05
10	4.33	0.56	18.65	0.56	24.10
11	4.37	0.56	18.64	0.56	24.15
12	4.43	0.55	18.63	0.56	24.19
13	4.47	0.55	18.61	0.56	24.21
14	4.50	0.55	18.59	0.56	24.22
15	4.54	0.55	18.57	0.56	24.24
16	4.60	0.54	18.55	0.56	24.27
17	4.65	0.54	18.54	0.56	24.30
18	4.69	0.54	18.52	0.56	24.34

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LOAD LIMITS
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PRESENT GROSS VEHICLE WEIGHT LIMIT - 80. KIPS
PRESENT SINGLE AXLE WEIGHT LIMIT --- 20. KIPS
PRESENT TANDEM AXLE WEIGHT LIMIT --- 34. KIPS
PRESENT TRIPLE AXLE WEIGHT LIMIT --- 56. KIPS
FUTURE GROSS VEHICLE WEIGHT LIMIT -- 120. KIPS
FUTURE SINGLE AXLE WEIGHT LIMIT ---- 22. KIPS
FUTURE TANDEM AXLE WEIGHT LIMIT ---- 36. KIPS
FUTURE TRIPLE AXLE WEIGHT LIMIT ---- 56. KIPS

TRUCK TYPE	PRESENT STEERING AXLE WEIGHT (KIPS)	FUTURE STEERING AXLE WEIGHT (KIPS)	PERCENT INCREASE IN EMPTY WEIGHT (KIPS)
2D	13.000	16.000	0.0
3A	13.000	16.000	0.0
3-S2	12.000	16.000	0.0
2-S1-2	8.000	16.000	0.0

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SINGLE AXLE LOADS

NUMBER OF LOAD INTERVALS - 11

LOAD INTERVAL	NUMBER OF AXLES WEIGHED TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
3.000 - 3.000	1.	0.	0.	0.
3.000 - 7.000	566.	0.	0.	47.
7.000 - 8.000	70.	0.	0.	18.
8.000 - 12.000	92.	0.	0.	126.
12.000 - 16.000	59.	0.	0.	101.
16.000 - 18.000	30.	0.	0.	40.
18.000 - 19.000	9.	0.	0.	12.
19.000 - 20.000	31.	0.	0.	13.
20.000 - 22.000	10.	0.	0.	13.
22.000 - 24.000	0.	0.	0.	3.
24.000 - 26.000	0.	0.	0.	2.

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TANDEM AXLE LOADS
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NUMBER OF LOAD INTERVALS - 15

LOAD INTERVAL	NUMBER OF AXLES WEIGHED			
	TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
6.000 - 6.000	0.	0.	0.	0.
6.000 - 12.000	0.	38.	568.	0.
12.000 - 18.000	0.	18.	552.	0.
18.000 - 24.000	0.	15.	518.	0.
24.000 - 30.000	0.	9.	815.	0.
30.000 - 32.000	0.	2.	428.	0.
32.000 - 33.000	0.	1.	88.	0.
33.000 - 34.000	0.	0.	244.	0.
34.000 - 36.000	0.	0.	246.	0.
36.000 - 38.000	0.	3.	133.	0.
38.000 - 40.000	0.	1.	70.	0.
40.000 - 42.000	0.	1.	26.	0.
42.000 - 44.000	0.	0.	15.	0.
44.000 - 46.000	0.	0.	14.	0.
46.000 - 50.000	0.	0.	3.	0.

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GROSS VEHICLE WEIGHT
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NUMBER OF LOAD INTERVALS - 28

LOAD INTERVAL	NUMBER OF VEHICLES WEIGHED TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
10.000 - 10.000	130.	0.	0.	0.
10.000 - 13.500	100.	5.	0.	0.
13.500 - 20.000	86.	34.	0.	0.
20.000 - 22.000	33.	4.	0.	0.
22.000 - 24.000	26.	5.	5.	0.
24.000 - 26.000	33.	5.	24.	0.
26.000 - 28.000	19.	3.	54.	1.
28.000 - 30.000	6.	3.	92.	4.
30.000 - 32.000	1.	9.	82.	1.
32.000 - 34.000	0.	3.	74.	2.
34.000 - 36.000	0.	5.	54.	3.
36.000 - 38.000	0.	1.	41.	0.
38.000 - 40.000	0.	2.	45.	3.
40.000 - 45.000	0.	2.	91.	1.
45.000 - 50.000	0.	5.	96.	4.
50.000 - 55.000	0.	0.	112.	7.
55.000 - 60.000	0.	1.	126.	6.
60.000 - 65.000	0.	0.	154.	7.
65.000 - 70.000	0.	0.	221.	8.
70.000 - 72.000	0.	0.	112.	2.
72.000 - 75.000	0.	0.	159.	9.
75.000 - 80.000	0.	0.	171.	8.
80.000 - 85.000	0.	0.	99.	7.
85.000 - 90.000	0.	0.	31.	0.
90.000 - 95.000	0.	0.	9.	1.
95.000 - 100.000	0.	0.	7.	0.
100.000 - 105.000	0.	0.	3.	0.
105.000 - 110.000	0.	0.	0.	0.

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EMPTY VEHICLE WEIGHT
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NUMBER OF LOAD INTERVALS - 13

LOAD INTERVAL	NUMBER OF VEHICLES WEIGHED			
	TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
4.000 - 6.000	14.	0.	0.	0.
6.000 - 8.000	78.	0.	0.	0.
8.000 - 10.000	143.	4.	0.	0.
10.000 - 12.000	107.	10.	0.	0.
12.000 - 14.000	75.	26.	0.	0.
14.000 - 16.000	50.	47.	2.	0.
16.000 - 18.000	9.	35.	4.	0.
18.000 - 20.000	7.	14.	19.	0.
20.000 - 25.000	4.	23.	290.	3.
25.000 - 30.000	0.	6.	262.	10.
30.000 - 35.000	0.	0.	120.	4.
35.000 - 40.000	0.	0.	24.	0.
40.000 - 45.000	0.	0.	4.	2.

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INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 2D

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	2.35	0.0	0.0	0.0
4.000	0.0	0.0	4.70	0.0	0.0	0.0
6.000	0.0	0.0	36.11	0.0	0.0	0.0
8.000	0.0	0.0	65.02	0.0	0.0	0.0
10.000	0.0	0.0	76.04	0.0	0.0	0.0
12.000	43.12	27.49	80.54	0.0	0.0	0.0
14.000	54.52	49.10	84.75	0.0	0.0	0.0
16.000	60.62	56.96	87.72	0.0	0.0	0.0
18.000	66.71	62.21	90.66	0.0	0.0	0.0
20.000	72.81	67.40	93.71	0.0	0.0	0.0
22.000	80.41	72.51	96.10	0.0	0.0	0.0
24.000	86.41	78.72	97.99	0.0	0.0	0.0
26.000	94.01	83.96	99.88	0.0	0.0	0.0
28.000	98.39	89.44	100.00	0.0	0.0	0.0
30.000	99.77	94.86	0.0	0.0	0.0	0.0
32.000	100.00	98.31	0.0	0.0	0.0	0.0
34.000	100.00	99.44	0.0	0.0	0.0	0.0
36.000	100.00	99.89	0.0	0.0	0.0	0.0
38.000	100.00	100.00	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 3A

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	0.0	1.46	0.0	0.0
4.000	0.0	0.0	0.0	2.91	0.0	0.0
6.000	0.0	0.0	0.0	4.37	0.0	0.0
8.000	0.0	0.0	0.0	12.78	0.0	0.0
10.000	0.0	0.0	0.0	25.89	0.0	0.0
12.000	3.28	2.70	0.0	39.16	0.0	0.0
14.000	8.75	7.48	0.0	47.29	0.0	0.0
16.000	20.78	17.20	0.0	53.92	0.0	0.0
18.000	32.80	28.36	0.0	59.87	0.0	0.0
20.000	44.83	39.44	0.0	65.71	0.0	0.0
22.000	49.43	46.97	0.0	70.88	0.0	0.0
24.000	55.17	51.58	0.0	75.92	0.0	0.0
26.000	60.92	56.76	0.0	80.51	0.0	0.0
28.000	64.37	61.51	0.0	83.77	0.0	0.0
30.000	67.82	64.58	0.0	86.79	0.0	0.0
32.000	78.16	67.62	0.0	89.67	0.0	0.0
34.000	81.61	76.30	0.0	91.11	0.0	0.0
36.000	87.36	80.54	0.0	92.36	0.0	0.0
38.000	88.51	84.80	0.0	93.61	0.0	0.0
40.000	90.80	87.83	0.0	94.87	0.0	0.0
42.000	91.72	89.12	0.0	96.21	0.0	0.0
44.000	92.64	90.91	0.0	97.56	0.0	0.0
46.000	94.25	91.69	0.0	98.92	0.0	0.0
48.000	96.55	92.46	0.0	100.00	0.0	0.0
50.000	98.85	93.66	0.0	0.0	0.0	0.0
52.000	98.85	95.40	0.0	0.0	0.0	0.0
54.000	98.85	97.48	0.0	0.0	0.0	0.0
56.000	99.08	98.85	0.0	0.0	0.0	0.0
58.000	99.54	98.85	0.0	0.0	0.0	0.0
60.000	100.00	98.88	0.0	0.0	0.0	0.0
62.000	0.0	99.09	0.0	0.0	0.0	0.0
64.000	0.0	99.50	0.0	0.0	0.0	0.0
66.000	0.0	99.92	0.0	0.0	0.0	0.0
68.000	0.0	100.00	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 3-S2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	0.0	1.22	0.0	0.0
4.000	0.0	0.0	0.0	2.44	0.0	0.0
6.000	0.0	0.0	0.0	3.66	0.0	0.0
8.000	0.0	0.0	0.0	4.88	0.0	0.0
10.000	0.0	0.0	0.0	9.22	0.0	0.0
12.000	0.0	0.0	0.0	14.04	0.0	0.0
14.000	0.0	0.0	0.0	18.69	0.0	0.0
16.000	0.0	0.0	0.0	23.29	0.0	0.0
18.000	0.0	0.0	0.0	27.81	0.0	0.0
20.000	0.0	0.0	0.0	32.15	0.0	0.0
22.000	0.0	0.0	0.0	36.33	0.0	0.0
24.000	0.27	0.17	0.0	40.50	0.0	0.0
26.000	1.56	1.02	0.0	44.93	0.0	0.0
28.000	4.46	3.07	0.0	51.28	0.0	0.0
30.000	9.40	6.70	0.0	57.67	0.0	0.0
32.000	13.80	11.09	0.0	64.03	0.0	0.0
34.000	17.78	15.04	0.0	72.85	0.0	0.0
36.000	20.68	18.45	0.0	81.40	0.0	0.0
38.000	22.88	21.01	0.0	88.27	0.0	0.0
40.000	25.30	23.04	0.0	93.16	0.0	0.0
42.000	27.25	25.24	0.0	95.39	0.0	0.0
44.000	29.21	27.03	0.0	96.07	0.0	0.0
46.000	31.21	28.79	0.0	96.74	0.0	0.0
48.000	33.28	30.59	0.0	97.42	0.0	0.0
50.000	35.34	32.42	0.0	98.09	0.0	0.0
52.000	37.74	34.26	0.0	98.77	0.0	0.0
54.000	40.15	36.22	0.0	99.44	0.0	0.0
56.000	42.71	38.36	0.0	100.00	0.0	0.0
58.000	45.41	40.50	0.0	0.0	0.0	0.0
60.000	48.12	42.75	0.0	0.0	0.0	0.0
62.000	51.43	45.13	0.0	0.0	0.0	0.0
64.000	54.74	47.49	0.0	0.0	0.0	0.0
66.000	58.76	50.22	0.0	0.0	0.0	0.0
68.000	63.51	53.09	0.0	0.0	0.0	0.0
70.000	68.26	56.21	0.0	0.0	0.0	0.0
72.000	74.27	59.84	0.0	0.0	0.0	0.0
74.000	79.97	63.91	0.0	0.0	0.0	0.0
76.000	84.65	67.97	0.0	0.0	0.0	0.0
78.000	88.32	73.01	0.0	0.0	0.0	0.0
80.000	92.00	77.90	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 3-S2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
82.000	94.12	82.23	0.0	0.0	0.0	0.0
84.000	96.25	85.84	0.0	0.0	0.0	0.0
86.000	97.65	88.93	0.0	0.0	0.0	0.0
88.000	98.31	92.00	0.0	0.0	0.0	0.0
90.000	98.98	93.93	0.0	0.0	0.0	0.0
92.000	99.17	95.86	0.0	0.0	0.0	0.0
94.000	99.37	97.27	0.0	0.0	0.0	0.0
96.000	99.54	98.07	0.0	0.0	0.0	0.0
98.000	99.69	98.68	0.0	0.0	0.0	0.0
100.000	99.84	99.07	0.0	0.0	0.0	0.0
102.000	99.90	99.24	0.0	0.0	0.0	0.0
104.000	99.97	99.41	0.0	0.0	0.0	0.0
106.000	100.00	99.57	0.0	0.0	0.0	0.0
108.000	0.0	99.70	0.0	0.0	0.0	0.0
110.000	0.0	99.84	0.0	0.0	0.0	0.0
112.000	0.0	99.90	0.0	0.0	0.0	0.0
114.000	0.0	99.96	0.0	0.0	0.0	0.0
116.000	0.0	99.99	0.0	0.0	0.0	0.0
118.000	0.0	100.00	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 2-S1-2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	1.85	0.0	0.0	0.0
4.000	0.0	0.0	3.69	0.0	0.0	0.0
6.000	0.0	0.0	7.40	0.0	0.0	0.0
8.000	0.0	0.0	15.64	0.0	0.0	0.0
10.000	0.0	0.0	25.56	0.0	0.0	0.0
12.000	0.0	0.0	39.16	0.0	0.0	0.0
14.000	0.0	0.0	52.14	0.0	0.0	0.0
16.000	0.0	0.0	63.05	0.0	0.0	0.0
18.000	0.0	0.0	73.76	0.0	0.0	0.0
20.000	0.0	0.0	83.17	0.0	0.0	0.0
22.000	0.0	0.0	90.46	0.0	0.0	0.0
24.000	0.0	0.0	95.19	0.0	0.0	0.0
26.000	0.0	0.0	96.49	0.0	0.0	0.0
28.000	1.35	0.23	97.78	0.0	0.0	0.0
30.000	6.76	1.67	99.08	0.0	0.0	0.0
32.000	8.11	6.44	100.00	0.0	0.0	0.0
34.000	10.81	7.86	0.0	0.0	0.0	0.0
36.000	14.86	9.97	0.0	0.0	0.0	0.0
38.000	14.86	13.05	0.0	0.0	0.0	0.0
40.000	18.92	14.86	0.0	0.0	0.0	0.0
42.000	19.46	15.94	0.0	0.0	0.0	0.0
44.000	20.00	18.98	0.0	0.0	0.0	0.0
46.000	21.35	19.44	0.0	0.0	0.0	0.0
48.000	23.51	19.89	0.0	0.0	0.0	0.0
50.000	25.68	20.84	0.0	0.0	0.0	0.0
52.000	29.46	22.33	0.0	0.0	0.0	0.0
54.000	33.24	24.10	0.0	0.0	0.0	0.0
56.000	36.76	26.02	0.0	0.0	0.0	0.0
58.000	40.00	29.09	0.0	0.0	0.0	0.0
60.000	43.24	32.15	0.0	0.0	0.0	0.0
62.000	47.03	35.04	0.0	0.0	0.0	0.0
64.000	50.81	37.77	0.0	0.0	0.0	0.0
66.000	54.86	40.34	0.0	0.0	0.0	0.0
68.000	59.19	42.90	0.0	0.0	0.0	0.0
70.000	63.51	45.81	0.0	0.0	0.0	0.0
72.000	66.22	48.77	0.0	0.0	0.0	0.0
74.000	74.32	51.77	0.0	0.0	0.0	0.0
76.000	80.54	54.91	0.0	0.0	0.0	0.0
78.000	84.86	58.23	0.0	0.0	0.0	0.0
80.000	89.19	61.54	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 2-S1-2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
82.000	92.97	64.33	0.0	0.0	0.0	0.0
84.000	96.76	66.71	0.0	0.0	0.0	0.0
86.000	98.65	72.81	0.0	0.0	0.0	0.0
88.000	98.65	77.82	0.0	0.0	0.0	0.0
90.000	98.65	81.87	0.0	0.0	0.0	0.0
92.000	99.19	85.08	0.0	0.0	0.0	0.0
94.000	99.73	88.27	0.0	0.0	0.0	0.0
96.000	100.00	91.16	0.0	0.0	0.0	0.0
98.000	0.0	93.93	0.0	0.0	0.0	0.0
100.000	0.0	96.68	0.0	0.0	0.0	0.0
102.000	0.0	98.09	0.0	0.0	0.0	0.0
104.000	0.0	98.65	0.0	0.0	0.0	0.0
106.000	0.0	98.65	0.0	0.0	0.0	0.0
108.000	0.0	98.65	0.0	0.0	0.0	0.0
110.000	0.0	99.10	0.0	0.0	0.0	0.0
112.000	0.0	99.55	0.0	0.0	0.0	0.0
114.000	0.0	99.86	0.0	0.0	0.0	0.0
116.000	0.0	100.00	0.0	0.0	0.0	0.0

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

TRUCK TYPE	PAYLOAD PER TRUCK		18-KIP AXLES PER TRUCK	
	PRESENT	PROPOSED	PRESENT	PROPOSED
2D	5.23	6.75	0.15	0.30
3A	8.33	10.04	0.20	0.34
3-S2	30.85	35.36	0.99	1.70
2-S1-2	31.19	40.24	1.62	3.85

YEAR	18-KIP ESAL RATIO (PROPOSED/PRESENT)	YEAR	18-KIP ESAL RATIO (PROPOSED/PRESENT)
1	1.525	11	1.525
2	1.525	12	1.525
3	1.525	13	1.525
4	1.525	14	1.525
5	1.525	15	1.525
6	1.525	16	1.525
7	1.525	17	1.525
8	1.525	18	1.525
9	1.525		
10	1.525		

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

PERCENT OF TOTAL LANE MILES IN POTTS
(BEGINNING OF ANALYSIS PERIOD) ---------------------------------- 13.88

LANE-MILES FROM GIVEN AGE SLICE DUE FOR TIMELY OVERLAY IN GIVEN ANALYSIS YEAR

VALUE	LOSS RATE	PAVEMENT AGE AT BEGINNING OF A.P.	TOTAL	INTO POTTS	ANALYSIS YEAR 1	2	3	4	5	6	7	8	9	10	11	12	13
190.	3.00	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
173.	3.00	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.	3.00	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
143.	3.00	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.	3.00	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.	3.00	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.	3.00	7	66.6	1.0	2.2	3.4	4.0	4.0	3.7	3.3	2.8	2.3	2.0	1.6	3.6	4.5	4.9
91.	3.00	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.	3.00	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73.	3.00	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.	3.00	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57.	3.00	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51.	3.00	13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47.	3.00	14	10.0	5.6	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.6	1.0	0.0
44.	3.00	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41.	3.00	16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38.	3.00	17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36.	3.00	18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34.	3.00	19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31.	3.00	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29.	3.00	21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27.	3.00	22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26.	3.00	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24.	3.00	24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22.	3.00	25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		TOTALS		6.7	2.8	3.8	4.3	4.3	4.0	3.5	3.0	2.5	2.1	1.7	4.2	5.5	4.9
AVERAGE AGE AT TERMINAL PSI					9.38	9.82	10.60	11.50	12.46	13.43	14.42	15.42	16.42	17.43	19.05	20.31	20.00

VALUE IN THOUSANDS OF DOLLARS LOSS RATE IN PERCENT PER YEAR

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

LANE-MILES FROM GIVEN AGE SLICE DUE FOR TIMELY OVERLAY IN GIVEN ANALYSIS YEAR

PAVEMENT AGE AT BEGINNING OF A.P.	ANALYSIS YEAR 14	15	16	17	18	19
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	4.8	4.4	3.8	3.2	2.7	4.5
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	4.8	4.4	3.8	3.2	2.7	4.5
AVERAGE AGE AT TERMINAL PSI	21.00	22.00	23.00	24.00	25.00	26.00

VALUE IN THOUSANDS OF DOLLARS LOSS RATE IN PERCENT PER YEAR

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

P E R F O R M A N C E T A B L E

P R E S E N T R E G U L A T I O N S

LANE MILES DUE OVERLAY	LANE MILES OVERLAID	YEAR OF OVERLAY	OVERLAY THICKNESS	PSI AT BEGINNING OF ANALYSIS	PSI AT END PERIOD	REMAINING LIFE (MILLION 18-KIP EAL)	OVERLAY COST ($/LANE MILE)
2.8	2.4	1.00	1.00	3.32	3.11	2.063	19860.
3.8	3.3	2.00	1.00	3.36	3.12	2.602	22203.
4.3	3.8	3.00	1.00	3.40	3.14	3.001	24823.
4.3	3.7	4.00	1.00	3.44	3.16	3.313	27752.
4.0	3.4	5.00	1.00	3.48	3.18	3.565	31027.
3.5	3.0	6.00	1.00	3.52	3.21	3.775	34688.
3.0	2.6	7.00	1.00	3.56	3.25	3.953	38782.
2.5	2.2	8.00	1.00	3.60	3.29	4.105	43358.
2.1	1.8	9.00	1.00	3.64	3.33	4.238	48474.
1.7	1.5	10.00	1.00	3.67	3.39	4.355	54194.
4.2	3.6	11.00	1.00	3.69	3.47	4.354	60589.
5.5	4.8	12.00	1.00	3.72	3.56	4.413	67738.
4.9	4.3	13.00	1.00	3.81	3.66	4.708	75731.
4.8	4.2	14.00	1.00	3.85	3.80	4.780	84667.
4.4	3.8	15.00	1.00	3.89	4.01	4.846	94658.
3.8	3.3	16.00	1.00	3.93	4.28	4.906	105827.
3.2	2.8	17.00	1.00	3.97	4.61	4.960	118315.
2.7	2.4	18.00	1.00	4.00	4.70	5.010	132276.
4.5	0.0	19.00	0.0	4.04	3.30	0.170	0.

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

P E R F O R M A N C E   T A B L E

P R O P O S E D   R E G U L A T I O N S

LANE MILES DUE OVERLAY	LANE MILES OVERLAID	YEAR OF OVERLAY	OVERLAY THICKNESS	PSI AT BEGINNING OF ANALYSIS	PSI AT END PERIOD	REMAINING LIFE (MILLION 18-KIP EAL)	OVERLAY COST ($/LANE MILE)
2.8	2.4	0.66	1.00	3.32	3.07	2.774	19860.
3.8	3.4	1.33	1.00	3.36	3.08	3.262	22203.
4.3	3.8	2.00	1.00	3.40	3.09	3.601	24823.
4.3	3.8	2.68	1.00	3.44	3.10	3.855	27752.
4.0	3.5	3.37	1.00	3.48	3.11	4.058	31027.
3.5	3.1	4.07	1.00	3.52	3.13	4.224	34688.
3.0	2.6	4.77	1.00	3.56	3.14	4.363	38782.
2.5	2.2	5.48	1.00	3.60	3.16	4.483	43358.
2.1	1.8	6.19	1.00	3.64	3.18	4.587	48474.
1.7	1.5	6.92	1.00	3.67	3.21	4.677	54194.
4.2	3.7	7.65	1.00	3.69	3.24	4.646	60589.
5.5	4.9	8.38	1.00	3.72	3.27	4.684	67738.
4.9	4.3	9.12	1.00	3.81	3.30	4.973	75731.
4.8	4.2	9.87	1.00	3.85	3.34	5.028	84667.
4.4	3.8	10.63	1.00	3.89	3.38	5.078	94658.
3.8	3.4	11.39	1.00	3.93	3.44	5.124	105827.
3.2	2.9	12.15	1.00	3.97	3.51	5.166	118315.
2.7	2.4	12.93	1.00	4.00	3.60	5.204	132276.
4.5	4.0	13.70	1.00	4.04	3.70	5.239	147884.

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

P O T T S T A B L E

P R E S E N T R E G U L A T I O N S

ANALYSIS YEAR	LANE MILES IN POTTS	LANE MILES OVERLAID FROM POTTS	OVERLAY THICKNESS	PSI AT END OF ANALYSIS PERIOD	OVERLAY COST ($/LANE-MILE)
1	6.5	0.5	1.50	3.36	29790.
2	6.3	0.7	1.50	3.37	33305.
3	6.1	0.8	1.50	3.39	37235.
4	5.9	0.8	1.50	3.41	41629.
5	5.7	0.7	1.50	3.43	46541.
6	5.5	0.6	1.50	3.45	52033.
7	5.4	0.5	1.50	3.48	58172.
8	5.2	0.5	1.50	3.51	65037.
9	5.1	0.4	1.50	3.55	72711.
10	5.0	0.3	1.50	3.60	81291.
11	4.8	0.8	1.50	3.66	90883.
12	4.6	1.0	1.50	3.73	101607.
13	4.3	0.9	1.50	3.82	113596.
14	4.1	0.9	1.50	3.95	127001.
15	3.8	0.8	1.50	4.12	141987.
16	3.7	0.7	1.50	4.35	158741.
17	3.5	0.6	1.50	4.62	177472.
18	3.4	0.5	1.50	4.70	198414.

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

P O T T S T A B L E

P R O P O S E D R E G U L A T I O N S

ANALYSIS YEAR	LANE MILES IN POTTS	LANE MILES OVERLAID FROM POTTS	OVERLAY THICKNESS	PSI AT END OF ANALYSIS PERIOD	OVERLAY COST ($/LANE-MILE)
1	6.5	0.4	1.50	3.24	29790.
2	6.4	0.6	1.50	3.25	33305.
3	6.0	1.4	1.50	3.26	37235.
4	5.8	0.6	1.50	3.28	41629.
5	5.5	1.0	1.50	3.29	46541.
6	5.4	0.4	1.50	3.31	52033.
7	5.2	0.6	1.50	3.33	58172.
8	5.0	0.7	1.50	3.36	65037.
9	4.8	0.9	1.50	3.39	72711.
10	4.4	1.6	1.50	3.42	81291.
11	4.2	0.7	1.50	3.47	90883.
12	4.0	0.6	1.50	3.52	101607.
13	3.7	1.0	1.50	3.60	113596.
14	3.5	0.7	1.50	3.70	127001.
15	3.5	0.0	1.50	3.86	141987.
16	3.5	0.0	1.50	4.10	158741.
17	3.5	0.0	1.50	4.48	177472.
18	3.5	0.0	1.50	4.70	198414.

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

INTFLX A INTERSTATE FLEX RURAL HOTMIX HIGH TRAFF

U N D I S C O U N T E D   C O S T S

(MILLIONS OF DOLLARS)

YEAR IN	MAINTENANCE		OVERLAY	
ANALYSIS PERIOD	PRESENT	PROPOSED	PRESENT	PROPOSED
1	0.064	0.099	0.062	0.062
2	0.096	0.147	0.097	0.096
3	0.116	0.130	0.123	0.241
4	0.109	0.072	0.136	0.124
5	0.081	0.036	0.140	0.225
6	0.053	0.024	0.137	0.097
7	0.037	0.022	0.131	0.166
8	0.030	0.025	0.123	0.204
9	0.031	0.033	0.115	0.302
10	0.039	0.047	0.107	0.589
11	0.053	0.068	0.290	0.297
12	0.071	0.092	0.427	0.290
13	0.089	0.112	0.422	0.510
14	0.103	0.124	0.461	0.427
15	0.112	0.130	0.470	0.0
16	0.117	0.138	0.459	0.0
17	0.119	0.153	0.438	0.0
18	0.120	0.179	0.413	0.0
TOTALS	1.441	1.630	4.553	3.630

S A L V A G E   V A L U E

(MILLIONS OF DOLLARS)

	ANALYSIS PERIOD	
	BEGINNING	END
PRESENT	-5.298	-5.767
PROPOSED	-5.298	-5.651
DELTA		0.116

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RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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RUN PARAMETERS          18    0     3.35        16.00        0.12        0.09        0.0
SYSTEM TITLE             0    0     0.0          0.0         0.0         0.0         0.0
INTERSTATE RIGID PAVEMENTS DISTRICT 17
 TEXAS TRANSPORTATION INSTITUTE
 SAMPLE RUN FOR RIGID PAVEMENTS
RIGID                    0    0    12.00       250.00        1.00  4200000.00        1.00
RGIH D17    INTERSTATE RIGID DISTRICT 17
CRC    8.00.0   LTB     6.00.0         0.00.0          0.00.0
AGE DISTRIBUTION        30    1     0.0          0.0         0.0         0.0         0.0
     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   180.0     0.0    76.0    11.0    90.0
     0.0    75.0     0.0    67.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
    526.00    499.00    493.00    474.00    347.00    306.00    283.00    262.00
    226.00    203.00    191.00    180.00    170.00    160.00    151.00    142.00
    134.00    126.00    119.00    112.00    106.00    100.00     94.00     89.00
     84.00      0.0       0.0       0.0       0.0       0.0
      2.00      2.00      2.00      2.00      2.00      2.00      2.00      2.00
      2.00      2.00      2.00      2.00      2.00      2.00      2.00      2.00
      2.00      2.00      2.00      2.00      2.00      2.00      2.00      2.00
      2.00      0.0       0.0       0.0       0.0       0.0
TRUCK TYPE               4    0     0.0          0.0         0.0         0.0         0.0
2D        3A        3-S2      2-S1-2
 1 0 0 0   0 1 0 0   0 2 0 0   4 0 0 0
  1   3.77  0.58 18.22  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.11
  2   3.83  0.58 18.29  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.25
  3   3.94  0.58 18.38  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.44
  4   3.98  0.57 18.46  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.56
  5   4.06  0.57 18.55  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.73
  6   4.12  0.57 18.53  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.77
  7   4.14  0.57 18.61  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.89
  8   4.23  0.56 18.59  0.55  0.0   0.0   0.0   0.0   0.0   0.0  23.82
  9   4.27  0.56 18.67  0.55  0.0   0.0   0.0   0.0   0.0   0.0  24.05
 10   4.33  0.56 18.65  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.10
 11   4.37  0.56 18.64  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.15
 12   4.43  0.55 18.63  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.19
 13   4.47  0.55 18.61  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.21
 14   4.50  0.55 18.59  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.22
 15   4.54  0.55 18.57  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.24
 16   4.60  0.54 18.55  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.27
 17   4.65  0.54 18.54  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.30
 18   4.69  0.54 18.52  0.56  0.0   0.0   0.0   0.0   0.0   0.0  24.34
LOAD LIMITS              0    0     0.0          0.0         0.0         0.0         0.0
     80.00     20.00     34.00     56.00
    120.00     22.40     36.00     56.00
     13.       13.       12.        8.
     16.       16.       16.       16.
SINGLE AXLES            11    0     3.00         0.0         0.0         0.0         0.0
        3.       1.       0.       0.       0.
        7.     566.      26.      71.      47.
        8.      70.      20.     329.      18.
       12.      92.      33.    1459.     126.
       16.      59.       8.      24.     101.
       18.      30.       0.       2.      40.
       19.       9.       0.       0.      12.
       20.      31.       0.       0.      13.
```

	22.	10.	0.	0.	13.				
	24.	0.	0.	0.	3.				
	26.	0.	0.	0.	2.				
TANDEM AXLES			15	0	6.00	0.0	0.0	0.0	0.0
	6.	0.	0.	0.	0.				
	12.	0.	38.	568.	0.				
	18.	0.	18.	552.	0.				
	24.	0.	15.	518.	0.				
	30.	0.	9.	815.	0.				
	32.	0.	2.	428.	0.				
	33.	0.	1.	88.	0.				
	34.	0.	0.	244.	0.				
	36.	0.	0.	246.	0.				
	38.	0.	3.	133.	0.				
	40.	0.	1.	70.	0.				
	42.	0.	1.	26.	0.				
	44.	0.	0.	15.	0.				
	46.	0.	0.	14.	0.				
	50.	0.	0.	3.	0.				
GVW			28	0	10.00	0.0	0.0	0.0	0.0
	10.	130.	0.	0.	0.				
	14.	100.	5.	0.	0.				
	20.	86.	34.	0.	0.				
	22.	33.	4.	0.	0.				
	24.	26.	5.	5.	0.				
	26.	33.	5.	24.	0.				
	28.	19.	3.	54.	1.				
	30.	6.	3.	92.	4.				
	32.	1.	9.	82.	1.				
	34.	0.	3.	74.	2.				
	36.	0.	5.	54.	3.				
	38.	0.	1.	41.	0.				
	40.	0.	2.	45.	3.				
	45.	0.	2.	91.	1.				
	50.	0.	5.	96.	4.				
	55.	0.	0.	112.	7.				
	60.	0.	1.	126.	6.				
	65.	0.	0.	154.	7.				
	70.	0.	0.	221.	8.				
	72.	0.	0.	112.	2.				
	75.	0.	0.	159.	9.				
	80.	0.	0.	171.	8.				
	85.	0.	0.	99.	7.				
	90.	0.	0.	31.	0.				
	95.	0.	0.	9.	1.				
	100.	0.	0.	7.	0.				
	105.	0.	0.	3.	0.				
	110.	0.	0.	0.	0.				
EMPTY			13	0	4.00	0.0	0.0	0.0	0.0
	6.	14.	0.	0.	0.				
	8.	78.	0.	0.	0.				
	10.	143.	4.	0.	0.				
	12.	107.	10.	0.	0.				
	14.	75.	26.	0.	0.				
	16.	50.	47.	2.	0.				
	18.	9.	35.	4.	0.				
	20.	7.	14.	19.	0.				
	25.	4.	23.	290.	3.				
	30.	0.	6.	262.	10.				
	35.	0.	0.	120.	4.				
	40.	0.	0.	24.	0.				

```
     45.      O.      O.      4.      2.
PERFORMANCE           0       0      4.20        3.00        4.20        20.00        0.0
    15.00
OVERLAY               2       3      0.0         0.0         0.0         0.0          0.0
    95.00     4.75      0.25        66.00        0.50     0.0        0.0
MODEL MAINT           1       0      0.0         0.0         0.0         0.0          0.0
     3.47     0.25    414.00
  1000.00     3.00      1.80         9.81
OLD SECTIONS          1       0   1800.00       10.00        0.0         0.0          0.0
OUTPUT                3       0      0.0         0.0         0.0         0.0          0.0
EXECUTE               0       0      0.0         0.0         0.0         0.0          0.0
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TEXAS TRANSPORTATION INSTITUTE

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

INTERSTATE RIGID PAVEMENTS DISTRICT 17
TEXAS TRANSPORTATION INSTITUTE
SAMPLE RUN FOR RIGID PAVEMENTS

RGIH D17 INTERSTATE RIGID DISTRICT 17

RUN PARAMETERS

LENGTH OF ANALYSIS PERIOD ---------------------------- 18 YEARS
ANNUAL GROWTH RATE OF 18 KIP EAL -------------------- 3.35 PERCENT/YEAR
ANNUAL INTEREST RATE FOR PRESENT WORTH CALCULATIONS - 16.00 PERCENT/YEAR

NUMBER OF 18-KIP ESAL UNDER PROPOSED REGULATIONS
DERIVED FROM 18-KIP ESAL UNDER PRESENT REGULATIONS
AND THE ASSUMPTION OF EQUAL PAYLOAD

RIGID STRUCTURE

NUMBER OF LAYERS ------------------- 2
LANE WIDTH ------------------------- 12.0 FEET
SUBBASE MODULUS -------------------- 250. PCI
FLEX STRENGTH ---------------------- 0. PSI
CONCRETE MODULUS ------------------- 4200000. PCI

MATERIALS

LAYER NUMBER	THICKNESS (IN.)	MATERIAL CODE	
1	8.00	CRC	CRC SURFACE
2	6.00	LTB	LIME TREATED BASE

PERFORMANCE

PSI INITIAL CONSTANT -- 4.20
TERMINAL PSI -- 3.00
PSI AFTER OVERLAY --- 4.20
AVERAGE AGE AT TERMINAL PSI FOR EXISTING DESIGN ------------ 15.00 YEARS
OVERLAY DESIGN LIFE --- 20.00 YEARS

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AGE DISTRIBUTION

LOSS RATE FACTOR FOR MILEAGE IN POTTS - 1.20

AGE	LANE MILES	VALUE	LOSS RATE	AGE	LANE MILES	VALUE	LOSS RATE	AGE	LANE MILES	VALUE	LOSS RATE
1	0.0	526.	2.00	11	180.0	191.	2.00	21	0.0	106.	2.00
2	0.0	499.	2.00	12	0.0	180.	2.00	22	0.0	100.	2.00
3	0.0	493.	2.00	13	76.0	170.	2.00	23	0.0	94.	2.00
4	0.0	474.	2.00	14	11.0	160.	2.00	24	0.0	89.	2.00
5	0.0	347.	2.00	15	90.0	151.	2.00	25	0.0	84.	2.00
6	0.0	306.	2.00	16	0.0	142.	2.00				
7	0.0	283.	2.00	17	75.0	134.	2.00				
8	0.0	262.	2.00	18	0.0	126.	2.00				
9	0.0	226.	2.00	19	67.0	119.	2.00				
10	0.0	203.	2.00	20	0.0	112.	2.00				

VALUE IN THOUSANDS OF DOLLARS

LOSS RATE IN PERCENT PER YEAR

OVERLAY

PERCENT OF PAVED SHOULDERS -----------	95.00 PERCENT
AVERAGE PAVED SHOULDER WIDTH/LANE ----	4.75 FEET
AVERAGE GRANULAR SHOULDER WIDTH/LANE -	0.25 FEET
UNIT COST OF ACP --------------------	66.00 $/CY
UNIT COST OF GRANULAR ---------------	0.50 $/SY/IN.

MODEL MAINTENANCE

ACCELERATED MAINTENANCE - YES

UNIT COSTS OF MAINTENANCE

1000.00 PER ONE DISTRESS

DISTRICT 1

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MAINTENANCE COSTS PER LANE-MILE PER YEAR

YEAR	FLEXIBLE	RIGID	COMPOSITE
1	2.62	1685.81	1.74
2	6.20	3323.76	4.11
3	14.66	4913.85	9.72
4	34.61	6456.08	22.93
5	81.32	7950.45	53.89
6	189.14	9396.96	125.35
7	429.78	10795.62	284.82
8	928.77	12146.41	615.50
9	1822.12	13449.34	1207.52
10	3068.50	9405.27	2033.50
11	4314.88	10749.58	2859.48
12	5208.23	12118.43	3451.50
13	5707.21	13511.80	3782.18
14	5947.86	14929.68	3941.65
15	6055.68	16372.11	4013.11
16	6102.39	821.83	4044.07
17	6122.34	1620.33	4057.28
18	6130.80	2395.50	4062.89
19	6134.38	3147.34	4065.27
20	6135.89	3875.85	4066.27
21	6136.54	4581.02	4066.69
22	6136.80	5262.86	4066.87
23	6136.91	5921.37	4066.95
24	6136.96	6556.55	4066.98

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OLD SECTIONS

MAINTENANCE COST (DOLLARS/LANE MILE/YEAR) FOR PAVEMENTS OLDER THAN TERMINAL SERVICEABILITY --------------------------------	1800.00
PERCENT OF TOTAL LANE MILES IN POTTS AT	
BEGINNING OF ANALYSIS PERIOD (CALCULATED) --------------	36.28
END OF ANALYSIS PERIOD (INPUT TARGET VALUE) ------------	10.00
PERCENT OF TOTAL LANE MILES NEVER OVERLAID ------------------	0.0

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TRUCK TYPES PRESENT
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TYPE	2D	3A	3-S2	2-S1-2	TOTAL
AXLE CODE	1000	0100	0200	4000	
YEAR	PERCENT OF ALL VEHICLES				
1	3.77	0.58	18.22	0.55	23.11
2	3.83	0.58	18.29	0.55	23.25
3	3.94	0.58	18.38	0.55	23.44
4	3.98	0.57	18.46	0.55	23.56
5	4.06	0.57	18.55	0.55	23.73
6	4.12	0.57	18.53	0.55	23.77
7	4.14	0.57	18.61	0.55	23.89
8	4.23	0.56	18.59	0.55	23.82
9	4.27	0.56	18.67	0.55	24.05
10	4.33	0.56	18.65	0.56	24.10
11	4.37	0.56	18.64	0.56	24.15
12	4.43	0.55	18.63	0.56	24.19
13	4.47	0.55	18.61	0.56	24.21
14	4.50	0.55	18.59	0.56	24.22
15	4.54	0.55	18.57	0.56	24.24
16	4.60	0.54	18.55	0.56	24.27
17	4.65	0.54	18.54	0.56	24.30
18	4.69	0.54	18.52	0.56	24.34

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LOAD LIMITS

PRESENT GROSS VEHICLE WEIGHT LIMIT -	80. KIPS
PRESENT SINGLE AXLE WEIGHT LIMIT ---	20. KIPS
PRESENT TANDEM AXLE WEIGHT LIMIT ---	34. KIPS
PRESENT TRIPLE AXLE WEIGHT LIMIT ---	56. KIPS
FUTURE GROSS VEHICLE WEIGHT LIMIT --	120. KIPS
FUTURE SINGLE AXLE WEIGHT LIMIT ----	22. KIPS
FUTURE TANDEM AXLE WEIGHT LIMIT ----	36. KIPS
FUTURE TRIPLE AXLE WEIGHT LIMIT ----	56. KIPS

TRUCK TYPE	PRESENT STEERING AXLE WEIGHT (KIPS)	FUTURE STEERING AXLE WEIGHT (KIPS)	PERCENT INCREASE IN EMPTY WEIGHT (KIPS)
2D	13.000	16.000	0.0
3A	13.000	16.000	0.0
3-S2	12.000	16.000	0.0
2-S1-2	8.000	16.000	0.0

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SINGLE AXLE LOADS

NUMBER OF LOAD INTERVALS - 11

LOAD INTERVAL	NUMBER OF AXLES WEIGHED TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
3.000 - 3.000	1.	0.	0.	0.
3.000 - 7.000	566.	0.	0.	47.
7.000 - 8.000	70.	0.	0.	18.
8.000 - 12.000	92.	0.	0.	126.
12.000 - 16.000	59.	0.	0.	101.
16.000 - 18.000	30.	0.	0.	40.
18.000 - 19.000	9.	0.	0.	12.
19.000 - 20.000	31.	0.	0.	13.
20.000 - 22.000	10.	0.	0.	13.
22.000 - 24.000	0.	0.	0.	3.
24.000 - 26.000	0.	0.	0.	2.

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TANDEM AXLE LOADS

NUMBER OF LOAD INTERVALS - 15

LOAD INTERVAL	NUMBER OF AXLES WEIGHED TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
6.000 - 6.000	0.	0.	0.	0.
6.000 - 12.000	0.	38.	568.	0.
12.000 - 18.000	0.	18.	552.	0.
18.000 - 24.000	0.	15.	518.	0.
24.000 - 30.000	0.	9.	815.	0.
30.000 - 32.000	0.	2.	428.	0.
32.000 - 33.000	0.	1.	88.	0.
33.000 - 34.000	0.	0.	244.	0.
34.000 - 36.000	0.	0.	246.	0.
36.000 - 38.000	0.	3.	133.	0.
38.000 - 40.000	0.	1.	70.	0.
40.000 - 42.000	0.	1.	26.	0.
42.000 - 44.000	0.	0.	15.	0.
44.000 - 46.000	0.	0.	14.	0.
46.000 - 50.000	0.	0.	3.	0.

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GROSS VEHICLE WEIGHT

NUMBER OF LOAD INTERVALS - 28

LOAD INTERVAL	NUMBER OF VEHICLES WEIGHED			
	TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
10.000 - 10.000	130.	0.	0.	0.
10.000 - 13.500	100.	5.	0.	0.
13.500 - 20.000	86.	34.	0.	0.
20.000 - 22.000	33.	4.	0.	0.
22.000 - 24.000	26.	5.	5.	0.
24.000 - 26.000	33.	5.	24.	0.
26.000 - 28.000	19.	3.	54.	1.
28.000 - 30.000	6.	3.	92.	4.
30.000 - 32.000	1.	9.	82.	1.
32.000 - 34.000	0.	3.	74.	2.
34.000 - 36.000	0.	5.	54.	3.
36.000 - 38.000	0.	1.	41.	0.
38.000 - 40.000	0.	2.	45.	3.
40.000 - 45.000	0.	2.	91.	1.
45.000 - 50.000	0.	5.	96.	4.
50.000 - 55.000	0.	0.	112.	7.
55.000 - 60.000	0.	1.	126.	6.
60.000 - 65.000	0.	0.	154.	7.
65.000 - 70.000	0.	0.	221.	8.
70.000 - 72.000	0.	0.	112.	2.
72.000 - 75.000	0.	0.	159.	9.
75.000 - 80.000	0.	0.	171.	8.
80.000 - 85.000	0.	0.	99.	7.
85.000 - 90.000	0.	0.	31.	0.
90.000 - 95.000	0.	0.	9.	1.
95.000 - 100.000	0.	0.	7.	0.
100.000 - 105.000	0.	0.	3.	0.
105.000 - 110.000	0.	0.	0.	0.

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EMPTY VEHICLE WEIGHT
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NUMBER OF LOAD INTERVALS - 13

LOAD INTERVAL	NUMBER OF VEHICLES WEIGHED TYPE 2D	TYPE 3A	TYPE 3-S2	TYPE 2-S1-2
4.000 - 6.000	14.	0.	0.	0.
6.000 - 8.000	78.	0.	0.	0.
8.000 - 10.000	143.	4.	0.	0.
10.000 - 12.000	107.	10.	0.	0.
12.000 - 14.000	75.	26.	0.	0.
14.000 - 16.000	50.	47.	2.	0.
16.000 - 18.000	9.	35.	4.	0.
18.000 - 20.000	7.	14.	19.	0.
20.000 - 25.000	4.	23.	290.	3.
25.000 - 30.000	0.	6.	262.	10.
30.000 - 35.000	0.	0.	120.	4.
35.000 - 40.000	0.	0.	24.	0.
40.000 - 45.000	0.	0.	4.	2.

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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RGIH D17 INTERSTATE RIGID DISTRICT 17

CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 2D

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	2.35	0.0	0.0	0.0
4.000	0.0	0.0	4.70	0.0	0.0	0.0
6.000	0.0	0.0	36.11	0.0	0.0	0.0
8.000	0.0	0.0	65.02	0.0	0.0	0.0
10.000	0.0	0.0	76.04	0.0	0.0	0.0
12.000	43.12	27.49	80.54	0.0	0.0	0.0
14.000	54.52	49.10	84.75	0.0	0.0	0.0
16.000	60.62	56.96	87.72	0.0	0.0	0.0
18.000	66.71	62.21	90.66	0.0	0.0	0.0
20.000	72.81	67.40	93.71	0.0	0.0	0.0
22.000	80.41	72.51	96.10	0.0	0.0	0.0
24.000	86.41	78.72	97.99	0.0	0.0	0.0
26.000	94.01	83.96	99.88	0.0	0.0	0.0
28.000	98.39	89.44	100.00	0.0	0.0	0.0
30.000	99.77	94.86	0.0	0.0	0.0	0.0
32.000	100.00	98.31	0.0	0.0	0.0	0.0
34.000	100.00	99.44	0.0	0.0	0.0	0.0
36.000	100.00	99.89	0.0	0.0	0.0	0.0
38.000	100.00	100.00	0.0	0.0	0.0	0.0

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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RGIH D17 INTERSTATE RIGID DISTRICT 17

CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 3A

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	0.0	1.46	0.0	0.0
4.000	0.0	0.0	0.0	2.91	0.0	0.0
6.000	0.0	0.0	0.0	4.37	0.0	0.0
8.000	0.0	0.0	0.0	12.78	0.0	0.0
10.000	0.0	0.0	0.0	25.89	0.0	0.0
12.000	3.28	2.70	0.0	39.16	0.0	0.0
14.000	8.75	7.48	0.0	47.29	0.0	0.0
16.000	20.78	17.20	0.0	53.92	0.0	0.0
18.000	32.80	28.36	0.0	59.87	0.0	0.0
20.000	44.83	39.44	0.0	65.71	0.0	0.0
22.000	49.43	46.97	0.0	70.88	0.0	0.0
24.000	55.17	51.58	0.0	75.92	0.0	0.0
26.000	60.92	56.76	0.0	80.51	0.0	0.0
28.000	64.37	61.51	0.0	83.77	0.0	0.0
30.000	67.82	64.58	0.0	86.79	0.0	0.0
32.000	78.16	67.62	0.0	89.67	0.0	0.0
34.000	81.61	76.30	0.0	91.11	0.0	0.0
36.000	87.36	80.54	0.0	92.36	0.0	0.0
38.000	88.51	84.80	0.0	93.61	0.0	0.0
40.000	90.80	87.83	0.0	94.87	0.0	0.0
42.000	91.72	89.12	0.0	96.21	0.0	0.0
44.000	92.64	90.91	0.0	97.56	0.0	0.0
46.000	94.25	91.69	0.0	98.92	0.0	0.0
48.000	96.55	92.46	0.0	100.00	0.0	0.0
50.000	98.85	93.66	0.0	0.0	0.0	0.0
52.000	98.85	95.40	0.0	0.0	0.0	0.0
54.000	98.85	97.48	0.0	0.0	0.0	0.0
56.000	99.08	98.85	0.0	0.0	0.0	0.0
58.000	99.54	98.85	0.0	0.0	0.0	0.0
60.000	100.00	98.88	0.0	0.0	0.0	0.0
62.000	0.0	99.09	0.0	0.0	0.0	0.0
64.000	0.0	99.50	0.0	0.0	0.0	0.0
66.000	0.0	99.92	0.0	0.0	0.0	0.0
68.000	0.0	100.00	0.0	0.0	0.0	0.0

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

RGIH D17 INTERSTATE RIGID DISTRICT 17

CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 3-S2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	0.0	1.22	0.0	0.0
4.000	0.0	0.0	0.0	2.44	0.0	0.0
6.000	0.0	0.0	0.0	3.66	0.0	0.0
8.000	0.0	0.0	0.0	4.88	0.0	0.0
10.000	0.0	0.0	0.0	9.22	0.0	0.0
12.000	0.0	0.0	0.0	14.04	0.0	0.0
14.000	0.0	0.0	0.0	18.69	0.0	0.0
16.000	0.0	0.0	0.0	23.29	0.0	0.0
18.000	0.0	0.0	0.0	27.81	0.0	0.0
20.000	0.0	0.0	0.0	32.15	0.0	0.0
22.000	0.0	0.0	0.0	36.33	0.0	0.0
24.000	0.27	0.17	0.0	40.50	0.0	0.0
26.000	1.56	1.02	0.0	44.93	0.0	0.0
28.000	4.46	3.07	0.0	51.28	0.0	0.0
30.000	9.40	6.70	0.0	57.67	0.0	0.0
32.000	13.80	11.09	0.0	64.03	0.0	0.0
34.000	17.78	15.04	0.0	72.85	0.0	0.0
36.000	20.68	18.45	0.0	81.40	0.0	0.0
38.000	22.88	21.01	0.0	88.27	0.0	0.0
40.000	25.30	23.04	0.0	93.16	0.0	0.0
42.000	27.25	25.24	0.0	95.39	0.0	0.0
44.000	29.21	27.03	0.0	96.07	0.0	0.0
46.000	31.21	28.79	0.0	96.74	0.0	0.0
48.000	33.28	30.59	0.0	97.42	0.0	0.0
50.000	35.34	32.42	0.0	98.09	0.0	0.0
52.000	37.74	34.26	0.0	98.77	0.0	0.0
54.000	40.15	36.22	0.0	99.44	0.0	0.0
56.000	42.71	38.36	0.0	100.00	0.0	0.0
58.000	45.41	40.50	0.0	0.0	0.0	0.0
60.000	48.12	42.75	0.0	0.0	0.0	0.0
62.000	51.43	45.13	0.0	0.0	0.0	0.0
64.000	54.74	47.49	0.0	0.0	0.0	0.0
66.000	58.76	50.22	0.0	0.0	0.0	0.0
68.000	63.51	53.09	0.0	0.0	0.0	0.0
70.000	68.26	56.21	0.0	0.0	0.0	0.0
72.000	74.27	59.84	0.0	0.0	0.0	0.0
74.000	79.97	63.91	0.0	0.0	0.0	0.0
76.000	84.65	67.97	0.0	0.0	0.0	0.0
78.000	88.32	73.01	0.0	0.0	0.0	0.0
80.000	92.00	77.90	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 3-S2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
82.000	94.12	82.23	0.0	0.0	0.0	0.0
84.000	96.25	85.84	0.0	0.0	0.0	0.0
86.000	97.65	88.93	0.0	0.0	0.0	0.0
88.000	98.31	92.00	0.0	0.0	0.0	0.0
90.000	98.98	93.93	0.0	0.0	0.0	0.0
92.000	99.17	95.86	0.0	0.0	0.0	0.0
94.000	99.37	97.27	0.0	0.0	0.0	0.0
96.000	99.54	98.07	0.0	0.0	0.0	0.0
98.000	99.69	98.68	0.0	0.0	0.0	0.0
100.000	99.84	99.07	0.0	0.0	0.0	0.0
102.000	99.90	99.24	0.0	0.0	0.0	0.0
104.000	99.97	99.41	0.0	0.0	0.0	0.0
106.000	100.00	99.57	0.0	0.0	0.0	0.0
108.000	0.0	99.70	0.0	0.0	0.0	0.0
110.000	0.0	99.84	0.0	0.0	0.0	0.0
112.000	0.0	99.90	0.0	0.0	0.0	0.0
114.000	0.0	99.96	0.0	0.0	0.0	0.0
116.000	0.0	99.99	0.0	0.0	0.0	0.0
118.000	0.0	100.00	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 2-S1-2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
2.000	0.0	0.0	1.85	0.0	0.0	0.0
4.000	0.0	0.0	3.69	0.0	0.0	0.0
6.000	0.0	0.0	7.40	0.0	0.0	0.0
8.000	0.0	0.0	15.64	0.0	0.0	0.0
10.000	0.0	0.0	25.56	0.0	0.0	0.0
12.000	0.0	0.0	39.16	0.0	0.0	0.0
14.000	0.0	0.0	52.14	0.0	0.0	0.0
16.000	0.0	0.0	63.05	0.0	0.0	0.0
18.000	0.0	0.0	73.76	0.0	0.0	0.0
20.000	0.0	0.0	83.17	0.0	0.0	0.0
22.000	0.0	0.0	90.46	0.0	0.0	0.0
24.000	0.0	0.0	95.19	0.0	0.0	0.0
26.000	0.0	0.0	96.49	0.0	0.0	0.0
28.000	1.35	0.23	97.78	0.0	0.0	0.0
30.000	6.76	1.67	99.08	0.0	0.0	0.0
32.000	8.11	6.44	100.00	0.0	0.0	0.0
34.000	10.81	7.86	0.0	0.0	0.0	0.0
36.000	14.86	9.97	0.0	0.0	0.0	0.0
38.000	14.86	13.05	0.0	0.0	0.0	0.0
40.000	18.92	14.86	0.0	0.0	0.0	0.0
42.000	19.46	15.94	0.0	0.0	0.0	0.0
44.000	20.00	18.98	0.0	0.0	0.0	0.0
46.000	21.35	19.44	0.0	0.0	0.0	0.0
48.000	23.51	19.89	0.0	0.0	0.0	0.0
50.000	25.68	20.84	0.0	0.0	0.0	0.0
52.000	29.46	22.33	0.0	0.0	0.0	0.0
54.000	33.24	24.10	0.0	0.0	0.0	0.0
56.000	36.76	26.02	0.0	0.0	0.0	0.0
58.000	40.00	29.09	0.0	0.0	0.0	0.0
60.000	43.24	32.15	0.0	0.0	0.0	0.0
62.000	47.03	35.04	0.0	0.0	0.0	0.0
64.000	50.81	37.77	0.0	0.0	0.0	0.0
66.000	54.86	40.34	0.0	0.0	0.0	0.0
68.000	59.19	42.90	0.0	0.0	0.0	0.0
70.000	63.51	45.81	0.0	0.0	0.0	0.0
72.000	66.22	48.77	0.0	0.0	0.0	0.0
74.000	74.32	51.77	0.0	0.0	0.0	0.0
76.000	80.54	54.91	0.0	0.0	0.0	0.0
78.000	84.86	58.23	0.0	0.0	0.0	0.0
80.000	89.19	61.54	0.0	0.0	0.0	0.0

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CUMULATIVE SHIFTED AXLE DISTRIBUTIONS (IN 2-KIP INTERVALS) FOR EACH TRUCK

TRUCK TYPE 2-S1-2

END OF WEIGHT INTERVAL (KIPS)	UNSHIFTED PERCENT WEIGHED GROSS	FINAL PERCENT WEIGHED GROSS	PERCENT SINGLE AXLES	PERCENT TANDEM AXLES	PERCENT TRIDEM AXLES	PERCENT STEERING AXLES
82.000	92.97	64.33	0.0	0.0	0.0	0.0
84.000	96.76	66.71	0.0	0.0	0.0	0.0
86.000	98.65	72.81	0.0	0.0	0.0	0.0
88.000	98.65	77.82	0.0	0.0	0.0	0.0
90.000	98.65	81.87	0.0	0.0	0.0	0.0
92.000	99.19	85.08	0.0	0.0	0.0	0.0
94.000	99.73	88.27	0.0	0.0	0.0	0.0
96.000	100.00	91.16	0.0	0.0	0.0	0.0
98.000	0.0	93.93	0.0	0.0	0.0	0.0
100.000	0.0	96.68	0.0	0.0	0.0	0.0
102.000	0.0	98.09	0.0	0.0	0.0	0.0
104.000	0.0	98.65	0.0	0.0	0.0	0.0
106.000	0.0	98.65	0.0	0.0	0.0	0.0
108.000	0.0	98.65	0.0	0.0	0.0	0.0
110.000	0.0	99.10	0.0	0.0	0.0	0.0
112.000	0.0	99.55	0.0	0.0	0.0	0.0
114.000	0.0	99.86	0.0	0.0	0.0	0.0
116.000	0.0	100.00	0.0	0.0	0.0	0.0

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TRUCK TYPE	PAYLOAD PER TRUCK		18-KIP AXLES PER TRUCK	
	PRESENT	PROPOSED	PRESENT	PROPOSED
2D	5.23	6.75	0.15	0.27
3A	8.33	10.04	0.35	0.53
3-S2	30.85	35.36	1.70	2.57
2-S1-2	31.19	40.24	1.61	3.27

YEAR	18-KIP ESAL RATIO (PROPOSED/PRESENT)	YEAR	18-KIP ESAL RATIO (PROPOSED/PRESENT)
1	1.330	11	1.330
2	1.330	12	1.330
3	1.330	13	1.329
4	1.330	14	1.329
5	1.329	15	1.329
6	1.329	16	1.329
7	1.329	17	1.329
8	1.329	18	1.329
9	1.329		
10	1.330		

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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PERCENT OF TOTAL LANE MILES IN POTTS
(BEGINNING OF ANALYSIS PERIOD) -------------------------------- 36.28

LANE-MILES FROM GIVEN AGE SLICE DUE FOR TIMELY OVERLAY IN GIVEN ANALYSIS YEAR

VALUE	LOSS RATE	PAVEMENT AGE AT BEGINNING OF A.P.	TOTAL	INTO POTTS	ANALYSIS YEAR 1	2	3	4	5	6	7	8	9	10	11	12	13
526.	2.00	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
499.	2.00	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
493.	2.00	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
474.	2.00	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
347.	2.00	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306.	2.00	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
283.	2.00	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
262.	2.00	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
226.	2.00	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
203.	2.00	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
191.	2.00	11	162.6	31.2	15.3	15.3	5.8	5.8	10.7	10.7	5.8	15.3	15.3	5.4	5.4	5.3	5.3
180.	2.00	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.	2.00	13	68.7	26.1	2.5	2.5	4.5	4.5	2.5	6.5	6.5	2.3	2.3	2.2	2.2	2.2	1.9
160.	2.00	14	9.9	4.1	0.4	0.7	0.7	0.4	0.9	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.0
151.	2.00	15	81.3	36.8	5.4	5.4	2.9	7.6	7.6	2.7	2.7	2.7	2.7	2.7	2.2	0.0	0.0
142.	2.00	16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
134.	2.00	17	67.8	39.6	2.4	6.4	6.4	2.3	2.3	2.2	2.2	2.2	1.9	0.0	0.0	0.0	0.0
126.	2.00	18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
119.	2.00	19	60.5	43.2	5.7	2.0	2.0	2.0	2.0	2.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0
112.	2.00	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106.	2.00	21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.	2.00	22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94.	2.00	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89.	2.00	24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.	2.00	25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		TOTALS		181.0	31.6	32.2	22.3	22.6	26.0	25.0	19.2	22.8	22.4	10.6	10.2	7.8	7.2
AVERAGE AGE AT TERMINAL PSI					14.77	15.57	17.45	18.10	18.60	19.23	20.67	20.29	21.22	22.51	23.42	23.68	24.53

VALUE IN THOUSANDS OF DOLLARS LOSS RATE IN PERCENT PER YEAR

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LANE-MILES FROM GIVEN AGE SLICE DUE FOR TIMELY OVERLAY IN GIVEN ANALYSIS YEAR

PAVEMENT AGE AT BEGINNING OF A.P.	ANALYSIS YEAR 14	15
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0
11	5.3	4.5
12	0.0	0.0
13	0.0	0.0
14	0.0	0.0
15	0.0	0.0
16	0.0	0.0
17	0.0	0.0
18	0.0	0.0
19	0.0	0.0
20	0.0	0.0
21	0.0	0.0
22	0.0	0.0
23	0.0	0.0
24	0.0	0.0
25	0.0	0.0
TOTALS	5.3	4.5

AVERAGE AGE AT TERMINAL PSI
25.00 26.00

VALUE IN THOUSANDS OF DOLLARS LOSS RATE IN PERCENT PER YEAR

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PERFORMANCE TABLE

PRESENT REGULATIONS

LANE MILES DUE OVERLAY	LANE MILES OVERLAID	YEAR OF OVERLAY	OVERLAY DESIGN D	OVERLAY THICKNESS	PSI AT BEGINNING OF ANALYSIS	PSI AT END PERIOD	REMAINING LIFE (MILLION 18-KIP EAL)	OVERLAY COST ($/LANE MILE)
31.6	26.7	1.00	9.34	3.34	3.11	3.23	3.727	66398.
32.2	27.1	2.00	9.27	3.19	3.20	3.30	4.695	70729.
22.3	18.8	3.00	9.14	2.85	3.27	3.38	5.300	70838.
22.6	19.1	4.00	9.10	2.75	3.35	3.45	6.094	76326.
26.0	21.9	5.00	9.07	2.67	3.42	3.51	6.858	82941.
25.0	21.1	6.00	9.03	2.58	3.48	3.58	7.535	89575.
19.2	16.2	7.00	8.95	2.39	3.53	3.64	7.927	92529.
22.8	19.2	8.00	8.97	2.44	3.60	3.70	8.784	105596.
22.4	18.9	9.00	8.93	2.32	3.64	3.76	9.222	112286.
10.6	9.0	10.00	8.87	2.16	3.68	3.82	9.514	117205.
10.2	8.6	11.00	8.83	2.06	3.71	3.88	9.887	124990.
7.8	6.6	12.00	8.81	2.03	3.76	3.93	10.409	137837.
7.2	6.1	13.00	8.78	1.95	3.79	3.98	10.734	147481.
5.3	4.5	14.00	8.76	1.90	3.83	4.03	11.140	160917.
4.5	3.8	15.00	8.72	1.81	3.85	4.08	11.372	170945.

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P E R F O R M A N C E   T A B L E

P R O P O S E D   R E G U L A T I O N S

LANE MILES DUE OVERLAY	LANE MILES OVERLAID	YEAR OF OVERLAY	OVERLAY DESIGN D	OVERLAY THICKNESS	PSI AT BEGINNING OF ANALYSIS	PSI AT END PERIOD	REMAINING LIFE (MILLION 18-KIP EAL)	OVERLAY COST ($/LANE MILE)
31.6	26.7	0.76	9.77	4.44	3.11	3.21	4.532	88085.
32.2	27.1	1.52	9.70	4.24	3.20	3.27	5.442	94188.
22.3	18.8	2.28	9.55	3.87	3.27	3.32	5.964	96112.
22.6	19.1	3.06	9.49	3.74	3.35	3.38	6.719	103699.
26.0	21.9	3.84	9.45	3.63	3.42	3.43	7.451	112603.
25.0	21.1	4.62	9.40	3.51	3.48	3.48	8.095	121706.
19.2	16.2	5.41	9.31	3.28	3.53	3.54	8.442	127255.
22.8	19.2	6.20	9.32	3.31	3.60	3.59	9.289	143325.
22.4	18.9	7.01	9.26	3.16	3.64	3.64	9.695	153127.
10.6	9.0	7.81	9.19	2.98	3.68	3.69	9.954	161383.
10.2	8.6	8.62	9.14	2.85	3.71	3.74	10.302	172827.
7.8	6.6	9.44	9.12	2.80	3.76	3.79	10.808	189710.
7.2	6.1	10.26	9.08	2.69	3.79	3.83	11.111	203661.
5.3	4.5	11.08	9.05	2.62	3.83	3.88	11.500	221804.
4.5	3.8	11.92	9.00	2.50	3.85	3.92	11.712	236867.

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RGIH D17 INTERSTATE RIGID DISTRICT 17

P O T T S T A B L E

P R E S E N T R E G U L A T I O N S

ANALYSIS YEAR	LANE MILES IN POTTS	LANE MILES OVERLAID FROM POTTS	OVERLAY DESIGN D	OVERLAY THICKNESS	PSI AT END OF ANALYSIS PERIOD	OVERLAY COST ($/LANE-MILE)
1	168.0	18.0	7.93	2.84	3.25	56335.
2	154.7	18.3	7.98	2.96	3.32	65698.
3	145.5	12.7	8.03	3.08	3.40	76470.
4	136.2	12.9	8.08	3.20	3.47	88896.
5	125.5	14.8	8.13	3.33	3.53	103182.
6	115.2	14.2	8.18	3.45	3.60	119604.
7	107.2	10.9	8.23	3.57	3.66	138470.
8	97.8	13.0	8.28	3.69	3.72	160130.
9	88.6	12.8	8.33	3.82	3.78	184998.
10	84.2	6.0	8.38	3.94	3.83	213492.
11	80.0	5.8	8.43	4.06	3.89	246150.
12	76.8	4.5	8.47	4.19	3.94	283551.
13	73.8	4.1	8.52	4.31	3.99	326369.
14	71.6	3.0	8.57	4.43	4.03	375354.
15	69.8	2.6	8.62	4.56	4.08	431384.
16	63.1	6.6	8.67	4.68	4.12	495427.
17	58.7	4.4	8.72	4.81	4.16	568612.
18	55.8	2.9	8.77	4.93	4.20	652197.

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RGIH D17 INTERSTATE RIGID DISTRICT 17

P O T T S T A B L E

P R O P O S E D R E G U L A T I O N S

ANALYSIS YEAR	LANE MILES IN POTTS	LANE MILES OVERLAID FROM POTTS	OVERLAY DESIGN D	OVERLAY THICKNESS	PSI AT END OF ANALYSIS PERIOD	OVERLAY COST ($/LANE-MILE)
1	168.0	18.0	8.36	3.90	3.24	77364.
2	154.7	18.3	8.41	4.02	3.32	89228.
3	145.5	12.7	8.46	4.14	3.39	102816.
4	125.5	27.7	8.51	4.27	3.46	118375.
5	115.2	14.2	8.56	4.39	3.52	136181.
6	107.2	10.9	8.61	4.51	3.59	156547.
7	97.8	13.0	8.65	4.64	3.65	179833.
8	84.2	18.8	8.70	4.76	3.71	206447.
9	80.0	5.8	8.75	4.89	3.77	236846.
10	76.8	4.5	8.80	5.01	3.82	271561.
11	73.8	4.1	8.85	5.14	3.88	311184.
12	69.8	5.6	8.90	5.26	3.93	356400.
13	69.8	0.0	8.95	5.39	3.98	407971.
14	69.8	0.0	9.01	5.51	4.03	466775.
15	69.8	0.0	9.06	5.64	4.07	533815.
16	63.1	6.6	9.11	5.77	4.12	610200.
17	58.7	4.4	9.16	5.89	4.16	697226.
18	55.8	2.9	9.21	6.02	4.20	796336.

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RGIH D17 INTERSTATE RIGID DISTRICT 17

U N D I S C O U N T E D   C O S T S

(MILLIONS OF DOLLARS)

YEAR IN ANALYSIS PERIOD	MAINTENANCE PRESENT	MAINTENANCE PROPOSED	OVERLAY PRESENT	OVERLAY PROPOSED
1	1.297	1.138	2.784	3.740
2	1.589	0.935	3.121	4.188
3	1.534	0.783	2.306	3.117
4	0.741	0.603	2.599	7.458
5	0.584	0.536	3.344	4.231
6	0.556	0.507	3.589	3.559
7	0.538	0.485	3.016	4.794
8	0.540	0.462	4.104	7.631
9	0.543	0.466	4.486	2.568
10	0.572	0.541	2.340	2.211
11	0.667	0.643	2.508	2.268
12	0.770	0.775	2.173	3.428
13	0.848	0.879	2.236	0.0
14	0.896	0.973	1.855	0.0
15	0.963	1.042	1.754	0.0
16	0.499	0.499	3.279	4.039
17	0.492	0.492	2.509	3.076
18	0.499	0.499	1.918	2.342
TOTALS	14.128	12.258	49.921	58.651

S A L V A G E   V A L U E
(MILLIONS OF DOLLARS)

	ANALYSIS PERIOD BEGINNING	ANALYSIS PERIOD END
PRESENT	-80.673	-59.530
PROPOSED	-80.673	-61.258
DELTA		-1.728

STOP	0	0	0.0	0.0	0.0	0.0	0.0

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INTERSTATE FLEX PAVEMENTS DISTRICT 17
TEXAS TRANSPORTATION INSTITUTE
SAMPLE RUN FOR FLEXIBLE PAVEMENTS

SECTION NUMBER	SECTION IDENTIFIER	LANE MILES	UNDISCOUNTED			PRESENT WORTH		UNIFORM ANNUAL COST		RATIO OF REMAINING LIFE PROPOSED/PRESENT
			DELTA COST	COST RATIO	DELTA SALVAGE VALUE	DELTA COST	COST RATIO	DELTA COST	COST RATIO	
1	INTFLX A	48.	-0.734	0.88	0.116	0.166	1.12	0.029	1.12	1.19
TOTAL		48.	-0.734		0.116	0.166		0.029		

ALL COSTS ARE IN MILLIONS OF DOLLARS

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INTERSTATE RIGID PAVEMENTS DISTRICT 17
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SECTION NUMBER	SECTION IDENTIFIER	LANE MILES	UNDISCOUNTED DELTA COST	UNDISCOUNTED COST RATIO	UNDISCOUNTED DELTA SALVAGE VALUE	PRESENT WORTH DELTA COST	PRESENT WORTH COST RATIO	UNIFORM ANNUAL COST DELTA COST	UNIFORM ANNUAL COST COST RATIO	RATIO OF REMAINING LIFE PROPOSED/PRESENT
1	RGIH D17	499.	6.860	1.11	-1.728	4.572	1.20	0.786	1.20	1.12
TOTAL		499.	6.860		-1.728	4.572		0.786		

ALL COSTS ARE IN MILLIONS OF DOLLARS

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SUMMARY REPORT

INTERSTATE FLEX PAVEMENTS DISTRICT 17
TEXAS TRANSPORTATION INSTITUTE
SAMPLE RUN FOR FLEXIBLE PAVEMENTS

MAINTENANCE
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.064	0.099	0.096	0.147	0.116	0.130	0.109	0.072	0.081	0.036
TOTAL	48.0	0.064	0.099	0.096	0.147	0.116	0.130	0.109	0.072	0.081	0.036

		6		7		8		9		10	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.053	0.024	0.037	0.022	0.030	0.025	0.031	0.033	0.039	0.047
TOTAL	48.0	0.053	0.024	0.037	0.022	0.030	0.025	0.031	0.033	0.039	0.047

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SAMPLE RUN FOR FLEXIBLE PAVEMENTS

MAINTENANCE
ALL COSTS ARE IN MILLIONS OF DOLLARS

		11		12		13		14		15	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.053	0.068	0.071	0.092	0.089	0.112	0.103	0.124	0.112	0.130
TOTAL	48.0	0.053	0.068	0.071	0.092	0.089	0.112	0.103	0.124	0.112	0.130

		16		17		18	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.117	0.138	0.119	0.153	0.120	0.179
TOTAL	48.0	0.117	0.138	0.119	0.153	0.120	0.179

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MAINTENANCE
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	1.297	1.138	1.589	0.935	1.534	0.783	0.741	0.603	0.584	0.536
TOTAL	499.0	1.297	1.138	1.589	0.935	1.534	0.783	0.741	0.603	0.584	0.536

		6		7		8		9		10	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	0.556	0.507	0.538	0.485	0.540	0.462	0.543	0.466	0.572	0.541
TOTAL	499.0	0.556	0.507	0.538	0.485	0.540	0.462	0.543	0.466	0.572	0.541

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MAINTENANCE
ALL COSTS ARE IN MILLIONS OF DOLLARS

		11		12		13		14		15	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	0.667	0.643	0.770	0.775	0.848	0.879	0.896	0.973	0.963	1.042
TOTAL	499.0	0.667	0.643	0.770	0.775	0.848	0.879	0.896	0.973	0.963	1.042

		16		17		18	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	0.499	0.499	0.492	0.492	0.499	0.499
TOTAL	499.0	0.499	0.499	0.492	0.492	0.499	0.499

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SUMMARY FOR ALL SYSTEMS

MAINTENANCE
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.064	0.099	0.096	0.147	0.116	0.130	0.109	0.072	0.081	0.036
2	499.0	1.297	1.138	1.589	0.935	1.534	0.783	0.741	0.603	0.584	0.536
TOTAL	547.0	1.361	1.237	1.684	1.082	1.650	0.912	0.850	0.675	0.665	0.572

		6		7		8		9		10	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.053	0.024	0.037	0.022	0.030	0.025	0.031	0.033	0.039	0.047
2	499.0	0.556	0.507	0.538	0.485	0.540	0.462	0.543	0.466	0.572	0.541
TOTAL	547.0	0.609	0.531	0.575	0.507	0.571	0.486	0.575	0.499	0.610	0.589

		11		12		13		14		15	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.053	0.068	0.071	0.092	0.089	0.112	0.103	0.124	0.112	0.130
2	499.0	0.667	0.643	0.770	0.775	0.848	0.879	0.896	0.973	0.963	1.042
TOTAL	547.0	0.721	0.711	0.841	0.867	0.938	0.991	1.000	1.097	1.076	1.172

		16		17		18	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.117	0.138	0.119	0.153	0.120	0.179
2	499.0	0.499	0.499	0.492	0.492	0.499	0.499
TOTAL	547.0	0.615	0.636	0.611	0.645	0.619	0.678

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INTERSTATE FLEX PAVEMENTS DISTRICT 17
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SAMPLE RUN FOR FLEXIBLE PAVEMENTS

REHABILITATION
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.062	0.062	0.097	0.096	0.123	0.241	0.136	0.124	0.140	0.225
TOTAL	48.0	0.062	0.062	0.097	0.096	0.123	0.241	0.136	0.124	0.140	0.225

		6		7		8		9		10	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.137	0.097	0.131	0.166	0.123	0.204	0.115	0.302	0.107	0.589
TOTAL	48.0	0.137	0.097	0.131	0.166	0.123	0.204	0.115	0.302	0.107	0.589

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REHABILITATION
ALL COSTS ARE IN MILLIONS OF DOLLARS

		11		12		13		14		15	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.290	0.297	0.427	0.290	0.422	0.510	0.461	0.427	0.470	0.0
TOTAL	48.0	0.290	0.297	0.427	0.290	0.422	0.510	0.461	0.427	0.470	0.0

		16		17		18	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.459	0.0	0.438	0.0	0.413	0.0
TOTAL	48.0	0.459	0.0	0.438	0.0	0.413	0.0

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REHABILITATION
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	2.784	3.740	3.121	4.188	2.306	3.117	2.599	7.458	3.344	4.231
TOTAL	499.0	2.784	3.740	3.121	4.188	2.306	3.117	2.599	7.458	3.344	4.231

		6		7		8		9		10	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	3.589	3.559	3.016	4.794	4.104	7.631	4.486	2.568	2.340	2.211
TOTAL	499.0	3.589	3.559	3.016	4.794	4.104	7.631	4.486	2.568	2.340	2.211

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SAMPLE RUN FOR RIGID PAVEMENTS

REHABILITATION
ALL COSTS ARE IN MILLIONS OF DOLLARS

		11		12		13		14		15	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	2.508	2.268	2.173	3.428	2.236	0.0	1.855	0.0	1.754	0.0
TOTAL	499.0	2.508	2.268	2.173	3.428	2.236	0.0	1.855	0.0	1.754	0.0

		16		17		18	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	3.279	4.039	2.509	3.076	1.918	2.342
TOTAL	499.0	3.279	4.039	2.509	3.076	1.918	2.342

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SUMMARY FOR ALL SYSTEMS

REHABILITATION
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.062	0.062	0.097	0.096	0.123	0.241	0.136	0.124	0.140	0.225
2	499.0	2.784	3.740	3.121	4.188	2.306	3.117	2.599	7.458	3.344	4.231
TOTAL	547.0	2.846	3.802	3.218	4.283	2.429	3.359	2.735	7.582	3.484	4.456

		6		7		8		9		10	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.137	0.097	0.131	0.166	0.123	0.204	0.115	0.302	0.107	0.589
2	499.0	3.589	3.559	3.016	4.794	4.104	7.631	4.486	2.568	2.340	2.211
TOTAL	547.0	3.727	3.656	3.147	4.960	4.227	7.836	4.601	2.870	2.447	2.801

		11		12		13		14		15	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.290	0.297	0.427	0.290	0.422	0.510	0.461	0.427	0.470	0.0
2	499.0	2.508	2.268	2.173	3.428	2.236	0.0	1.855	0.0	1.754	0.0
TOTAL	547.0	2.798	2.564	2.600	3.718	2.658	0.510	2.316	0.427	2.224	0.0

		16		17		18	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.459	0.0	0.438	0.0	0.413	0.0
2	499.0	3.279	4.039	2.509	3.076	1.918	2.342
TOTAL	547.0	3.738	4.039	2.947	3.076	2.331	2.342

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ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.127	0.161	0.193	0.243	0.239	0.371	0.245	0.196	0.221	0.261
TOTAL	48.0	0.127	0.161	0.193	0.243	0.239	0.371	0.245	0.196	0.221	0.261

		6		7		8		9		10	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.191	0.121	0.168	0.188	0.153	0.229	0.146	0.334	0.146	0.636
TOTAL	48.0	0.191	0.121	0.168	0.188	0.153	0.229	0.146	0.334	0.146	0.636

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ALL COSTS ARE IN MILLIONS OF DOLLARS

		11		12		13		14		15	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.343	0.364	0.499	0.382	0.511	0.622	0.564	0.551	0.582	0.130
TOTAL	48.0	0.343	0.364	0.499	0.382	0.511	0.622	0.564	0.551	0.582	0.130

		16		17		18	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
INTFLX A	48.0	0.576	0.138	0.557	0.153	0.533	0.179
TOTAL	48.0	0.576	0.138	0.557	0.153	0.533	0.179

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
VERSION 1.1 - AUGUST 1981

SUMMARY REPORT

INTERSTATE RIGID PAVEMENTS DISTRICT 17
TEXAS TRANSPORTATION INSTITUTE
SAMPLE RUN FOR RIGID PAVEMENTS

ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	4.081	4.878	4.709	5.123	3.840	3.900	3.340	8.061	3.928	4.767
TOTAL	499.0	4.081	4.878	4.709	5.123	3.840	3.900	3.340	8.061	3.928	4.767

		6		7		8		9		10	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	4.145	4.065	3.554	5.279	4.644	8.093	5.030	3.035	2.912	2.753
TOTAL	499.0	4.145	4.065	3.554	5.279	4.644	8.093	5.030	3.035	2.912	2.753

RENU * - WEIGHT EFFECTS ON PAVEMENT PERFORMANCE
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SUMMARY REPORT

INTERSTATE RIGID PAVEMENTS DISTRICT 17
TEXAS TRANSPORTATION INSTITUTE
SAMPLE RUN FOR RIGID PAVEMENTS

ALL COSTS ARE IN MILLIONS OF DOLLARS

		11		12		13		14		15	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	3.175	2.911	2.943	4.203	3.084	0.879	2.751	0.973	2.717	1.042
TOTAL	499.0	3.175	2.911	2.943	4.203	3.084	0.879	2.751	0.973	2.717	1.042

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		16		17		18	
SECTION	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
RGIH D17	499.0	3.777	4.537	3.001	3.568	2.417	2.841
TOTAL	499.0	3.777	4.537	3.001	3.568	2.417	2.841

SUMMARY FOR ALL SYSTEMS
ALL COSTS ARE IN MILLIONS OF DOLLARS

		1		2		3		4		5	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.127	0.161	0.193	0.243	0.239	0.371	0.245	0.196	0.221	0.261
2	499.0	4.081	4.878	4.709	5.123	3.840	3.900	3.340	8.061	3.928	4.767
TOTAL	547.0	4.207	5.039	4.902	5.366	4.079	4.271	3.585	8.257	4.149	5.028

		6		7		8		9		10	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.191	0.121	0.168	0.188	0.153	0.229	0.146	0.334	0.146	0.636
2	499.0	4.145	4.065	3.554	5.279	4.644	8.093	5.030	3.035	2.912	2.753
TOTAL	547.0	4.335	4.187	3.722	5.467	4.798	8.322	5.176	3.369	3.058	3.389

		11		12		13		14		15	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.343	0.364	0.499	0.382	0.511	0.622	0.564	0.551	0.582	0.130
2	499.0	3.175	2.911	2.943	4.203	3.084	0.879	2.751	0.973	2.717	1.042
TOTAL	547.0	3.518	3.275	3.441	4.585	3.596	1.501	3.316	1.524	3.299	1.172

		16		17		18	
SYSTEM	TOTAL LNMILES	PRESENT	PROPOSED	PRESENT	PROPOSED	PRESENT	PROPOSED
1	48.0	0.576	0.138	0.557	0.153	0.533	0.179
2	499.0	3.777	4.537	3.001	3.568	2.417	2.841
TOTAL	547.0	4.354	4.675	3.558	3.721	2.950	3.020