c. **Stabilized Subbase.** Stabilized subbases also offer considerably higher strength to the pavement than P-154. Recommended equivalency factors associated with stabilized subbase are presented in Table 3-7.

TABLE 3-7. RECOMMENDED EQUWALENCY FACTOR RANGES FOR STABILIZED SUBBASE

Material	Equivalency Factor Range
P-301, Soil Cement Base Course	1.0 - 1.5
P-304, Cement Treated Base Course	1.6 - 2.3
P-306, Econocrete Subbase Course	1.6 - 2.3
P-401, Plant Mix Bituminous Pavements	1.7 - 2.3

d. **Granular Base.** The FAA standard for granular base is Item P-209, Crushed Aggregate Base Course. In some instances it may be advantageous to utilize other nonstabilized granular material as base course. Other materials acceptable for use as granular base course are as follows:

TABLE 3-8. RECOMMENDED EQUIVALENCY FACTOR RANGES FOR GRANULAR BASE

Material	Equivalency Factor Range
P-208, Aggregate Base Course	1.0’
P-21 1, Lime Rock Base Course	1.0

‘Substitution of P-208 for P-209 is permissible only if the gross weight of the design aircraft is 60,000 lbs (27 000 kg) or less. In addition, if P-208 is substituted for P-209, the required thickness of hot mix asphalt surfacing shown on the design curves should be increased 1 inch (25 mm).

e. **Stabilized Base.** Stabilized base courses offer structural benefits to a flexible pavement in much the same manner as stabilized subbase. The benefits are expressed as equivalency factors similar to those shown for stabilized subbase. In developing the equivalency factors Item P-209, Crushed Aggregate Base Course, with an assumed CBR of 80 was used as the basis for comparison. The thickness of stabilized base is computed by dividing the granular base course thickness requirement by the appropriate equivalency factor. The equivalency factor ranges are given below in Table 3-9. Ranges of equivalency factors are shown rather than single values since variations in the quality of materials, construction techniques, and control can influence the equivalency factor. In the selection of equivalency factors, consideration should be given to the traffic using the pavement, total pavement thickness, and the thickness of the individual layer. For example, a thin layer in a pavement structure subjected to heavy loads spread over large areas will result in an equivalency factor near the low end of the range. Conversely, light loads on thick layers will call for equivalency factors near the upper end of the ranges.

TABLE 3-9. RECOMMENDED EQUIVALENCY FACTOR RANGES FOR STABILIZED BASE

Material	Eauivalencv Factor Range
P-304, Cement Treated Base Course	1.2 - 1.6
P-306, Econocrete Subbase Course	1.2 - 1.6
P-401, Plant Mix Bituminous Pavements	1.2 - 1.6

Note: Reflection cracking may be encountered when P-304 or P-306 is used as base for a flexible pavement. The thickness of the hot mix asphalt surfacing course should be at least 4 inches (100 mm) to minimize reflection cracking in these instances.

f. **Example.** As an example of the use of equivalency factors, assume a flexible pavement is required to serve a design aircraft weighing 300,000 pounds (91 000 kg) with a dual tandem gear. The equivalent annual departures are 15,000. The design CBR for the subgrade is 7. Item P-401 will be used for the base course and the subbase course.

(1) Total Pavement Thickness Unstabilized. Enter Figure 3-4 with the subgrade CBR value of 7 and read a total pavement thickness of 37.5 inches (953 mm). This thickness includes surfacing, granular base (P-209) and granular subbase (P-154)

(2) Thickness of Base and Surface Unstabilized. Re-enter Figure 3-4 with the assumed subbase CBR (P-154) of 20 (see paragraph 321 b.) and read a thickness of 17.0 inches (432 mm). This thickness includes surfacing and granular base (P-209). The note on Figure 3-4 states that the thickness of surfacing for critical areas is 4 inches (100 mm).

(3) Unstabilized Section. The unstabilized section would thus consist of 4 inches (100 mm) of surfacing, 13 inches (330 mm) of granular base (P-209) and 20 l/2 inches (520 mm) of granular subbase (P-154).

(4) Stabilized Base Thickness. Assume the equivalency factor for P-401 base material to be 1.4. The required thickness of stabilized base is determined by dividing the thickness of granular base calculated in step (3) above by the equivalency factor. In this example 13 inches (330 mm) would be divided by 1.4 yielding 9 inches (230 mm).

(5) Stabilized Subbase Thickness. Referring to Table 3-6, assume the equivalency factor for P-401 used as subbase is 2.0. Divide the thickness of granular subbase 20 1/2 inches (520 mm) by 2.0 which yields 10 inches (255 mm) of P-401 subbase.

(6) Stabilized Section. The stabilized section would be 4 inches (100 mm) of surfacing, 9 inches (230 mm) of stabilized base (P-401) and 10 inches (255 mm) of stabilized subbase (P-401).

(7) Check Minimum Thickness. The total pavement thickness given above 4 + 9 + 10 = 23 inches (585 mm) is then compared to the total pavement thickness required for a CBR of 20. This was done in step (2) above and gave a thickness of 17.0 inches (430 mm). Since the calculated thickness of 23 inches (585 mm) is larger than the CBR=20 minimum thickness of 17 inches (430 mm), the design is adequate. Had the CBR=20 thickness exceeded the calculated thickness, the subbase thickness would have been increased to make up the difference.

322. FULL-DEPTH ASPHALT PAVEMENTS. Full-depth asphalt pavements contain asphaltic cement in all components above the prepared subgrade. The design of full-depth asphalt pavements can be accomplished using the equivalency factors presented in paragraph 321 and illustrated in paragraph 321f. Manual Series No. 11 prepared by the Asphalt Institute, dated January 1973, can also be used to design full-depth asphalt pavements when approved by the FAA.

323. FROST EFFECTS. Frost protection should be provided in areas where conditions conductive to detrimental frost action exist. Levels of frost protection are given in paragraph 308b of this document. Frost considerations may result in thicker subbase courses than the thicknesses needed for structural support.

a. Example. An example of pavement design for seasonal frost follows. Assume the same design conditions as in paragraph 321f above.

(1) Structural Requirements. The structural requirements for the example are: 4 inches (100 mm) of surfacing, 9 inches (230 mm) of stabilized base, and 10 inches (255 mm) of stabilized subbase. This section provides a total pavement thickness of 23 inches (585 mm).

(2) Determine Soil Frost Group. Assume the subgrade soil is a clayey sand SC with 10% of the material finer than 0.02 mm. The unit dry weight of the subgrade soil is 115 pcf (184 kg/cu m). The soil frost group is found in Table 2-4 and in this example is FG-2.

(3) Determine the Depth of Frost Penetration. The design air freezing index for the area is 350 degree days. Referring to figure 2-6 the depth of frost penetration is found to be 28 inches.

(4) **Types of Frost protection.** Several levels of frost protection are possible as follows:

(i) **Complete Frost Protection.** Complete frost protection would require the pavement section be increased from 23 inches (585 mm) to 28 inches (710 mm). This would require placing 5 inches (125 mm) of nonfrost susceptible material beneath the structural section.

(ii) **Limited Frost Protection.** Limited subgrade frost penetration provides nonfrost susceptible material to a depth of 65% of the depth of frost penetration. In this example, 65% of 28 inches (710 mm) equals 18 inches (460 mm). Since the structural design section provides a total pavement thickness of 23 inches (585 mm), no further protection is required. The structural section provides more than enough protection to satisfy the limited subgrade frost penetration requirements.

(iii) **Reduced Subgrade Strength.** The reduced subgrade strength rating for an FG-2 soil is found in paragraph 308a.(3) and is a CBR of 7. Since the design CBR used in the example was 7, the structural design is adequate for the reduced subgrade strength method of frost protection. As has been previously mentioned, this method is intended to provide adequate structural support when the frost is melting.

(5) **Summary.** In summary, for areas sensitive to pavement heave due to frost action the complete protection method should be used. This would add 4 inches (100 mm) of nonfrost susceptible material to the structural section. In areas where some degree of pavement heave due to frost action can be tolerated, the structural section will be adequate. The same is true for providing structural support during periods of frost melting, i.e. the structural section is adequate.

SECTION 3. RIGID PAVEMENT DESIGN

324. GENERAL. Rigid pavements for airports are composed of portland cement concrete placed on a granular or treated subbase course that is supported on a compacted subgrade. Under certain conditions, a subbase is not required, see paragraph 326.

325. CONCRETE PAVEMENT. The concrete surface must provide a nonskid surface, prevent the infiltration of surface water, and provide structural support to the Item P-501, Cement Concrete Pavement.

326. SUBBASE. The purpose of a subbase under a rigid pavement is to provide uniform stable support for the pavement slabs. A minimum thickness of 4 inches (100 mm) of subbase is required under all rigid pavements, except as shown in Table 3-10 below:

TABLE 3-10. CONDITIONS WHERE NO SUBBASE IS REQUIRED

Soil Classification	Good Drainage		Poor Drainage	
	No Frost	Frost	No Frost	Frost
GW	X	X	X	X
GP	X	X	X	
GM	X			
GC	X			
SW	X			

Note: X indicates conditions where no subbase is required.

327. SUBBASE QUALITY. The standard FAA subbase for rigid pavements is 4 inches (100 mm) of Item P-154, Subbase Course. In some instances it may be desirable to use higher quality materials or thicknesses of P-154 greater than 4 inches (100 mm). The following materials are acceptable for use as subbase under rigid pavements:

Item P-154 - Subbase Course
Item P-208 - Aggregate Base Course
Item P-209 - Crushed Aggregate Base Course
Item P-211 - Lime Rock Base Course
Item P-304 - Cement Treated Base Course
Item P-306 - Econocrete Subbase Course
Item P-401 - Plant Mix Bituminous Pavements

Materials of higher quality than P-154 and/or greater thicknesses of subbase are considered in the design process through the foundation modulus (k value). The costs of providing the additional thickness or higher quality subbase should be weighed against the savings in concrete thickness.

328. STABILIZED SUBBASE. Stabilized subbase is required for all new rigid pavements designed to accommodate aircraft weighing 100,000 pounds (45 400 kg) or more. Stabilized subbases are as follows:

Item P-304 - Cement Treated Base Course
Item P-306 - Econocrete Subbase Course
Item P-401 - Plant Mix Bituminous Pavements

The structural benefit imparted to a pavement section by a stabilized subbase is reflected in the modulus of subgrade reaction assigned to the foundation. Exceptions to the policy of using stabilized subbase are the same as given in paragraph 320.

329. SUBGRADE. The subgrade materials under a rigid pavement should be compacted to provide adequate stability and uniform support as with flexible pavement; however, the compaction requirements for rigid pavements are not as stringent as flexible pavement due to the relatively lower subgrade stress. For cohesive soils used in fill sections, the entire till shall be compacted to 90 percent maximum density. For cohesive soils in cut sections, the top 6 inches (150 mm) of the subgrade shall be compacted to 90 percent maximum density. For noncohesive soils used in fill sections, the top 6 inches (150 mm) of fill shall be compacted to 100 percent maximum density, and the remainder of the fill shall be compacted to 95 percent maximum density. For cut sections in noncohesive soils, the top 6 inches (150 mm) of subgrade shall be compacted to 100 percent maximum density and the next 18 inches (460 mm) of subgrade shall be compacted to 95 percent maximum density. Swelling soils will require special considerations. Paragraph 314 contains guidance on the identification and treatment of swelling soils.

a. Contamination. In rigid pavement systems, repeated loading may cause intermixing of soft subgrade soils and aggregate base or subbase. This mixing may create voids below the pavement in which moisture can accumulate causing a pumping situation to occur. Chemical and mechanical stabilization of the subbase or subgrade can be effectively used to reduce aggregate contamination (refer to Section 207). Geotextiles have been found to be effective at providing separation between fine-grained subgrade soils and pavement aggregates (FHWA-90-001) (see Appendix 4). Geotextiles should be considered for separation between tine-grained soils and overlying pavement aggregates. In this application, the geotextile is not considered to act as a structural element within the pavement. Therefore, the modulus of the base or subbase is not considered to be increased when a geotextile is used for stabilization. For separation applications, the geatextile is designed based on survivability properties. Refer to FHWA-90-001 (see Appendix 4) for additional information regarding design and construction using separation geotextiles.

330. DETERMINATION OF FOUNDATION MODULUS (k VALUE) FOR RIGID PAVEMENT. In addition to the soils survey and analysis and classification of subgrade conditions, the determination of the foundation modulus is required for rigid pavement design. The foundation modulus (k value) should be assigned to the material directly beneath the concrete pavement. However, it is recommended that a k value be established for the subgrade and then corrected to account for the effects of subbase.

a. Determination of k Value for Subgrade. The preferred method of determining the subgrade modulus is by testing a limited section of embankment which has been constructed to the required specifications. The plate bearing test procedures are given in AASHTO T 222, Nonrepetitive Static Plate Load Test of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements. If the construction and testing of a test section of embankment is impractical, the values listed in Table 2-3 may be used. The designer is cautioned that the values in Table 2-3 are approximate and engineering judgment should be used in selecting a design value. Fortunately, rigid pavement is not too sensitive to k value and an error in estimating k will not have a large impact on rigid pavement thickness.

b. Determination of k Value for Granular Subbase. The determination of a foundation modulus on top of a subbase by testing is usually not practical, at least in the design phase. Usually, the embankment and subbase will not be in place in time to perform any field tests. The assignment of a k value will have to be done without the benefit of testing. The probable increase in k value associated with various thicknesses of different subbase materials is shown in Figures 2-5a and 2-5b. Figure 2-5a is intended for use when the subbase is composed of well graded crushed aggregate such as P-209. Figure 2-5b applies to bank-run sand and gravel such as P-154. These curves apply to unstabilized granular materials. Values shown in Figures 2-5a and 2-5b are considered guides and may be tempered by local experience.

c. Determination of k Value for Stabilized Subbase. As with granular subbase, the effect of stabilized subbase is reflected in the foundation modulus. Figure 3-16 shows the probable increase in k value with various thicknesses of stabilized subbase located on subgrades of varying moduli. Figure 3-16 is applicable to cement stabilized (P-304) Econocrete (P-306), and bituminous stabilized (P-401) layers. Figure 3-16 was developed by assuming a stabilized layer is twice as effective as well-graded crushed aggregate in increasing the subgrade modulus. Stabilized layers of lesser quality than P-304, P-306 or P-401 should be assigned somewhat lower k values. After a k value is assigned to the stabilized subbase, the design procedure is the same as described in paragraph 331.

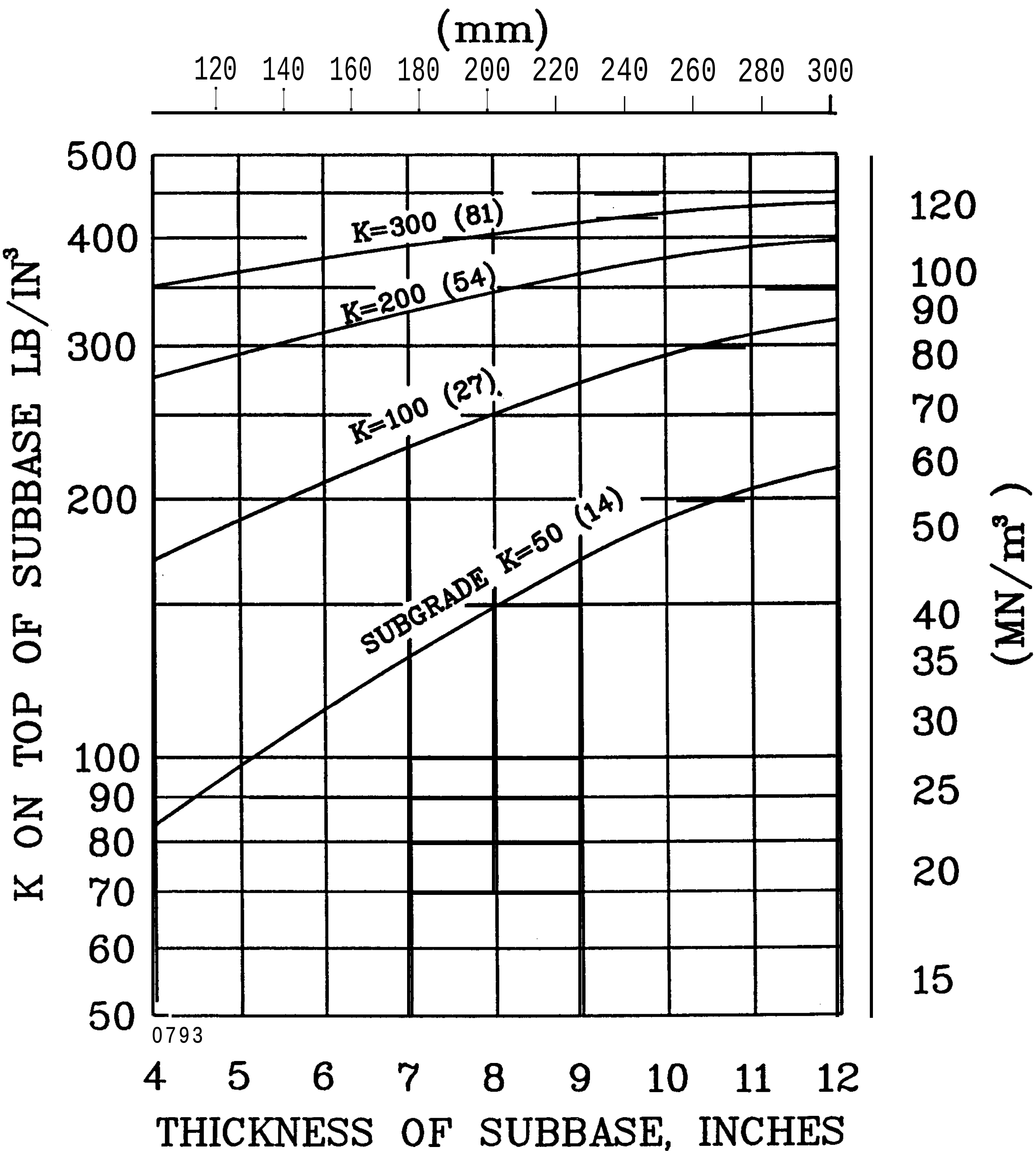


FIGURE 3-16 EFFECT OF STABILIZED SUBBASE ON SUBGRADE MODULUS

331. DETERMINATION OF CONCRETE SLAB THICKNESS. Design curves have been prepared for rigid pavements similar to those for flexible pavements; i.e., separate curves for a variety of landing gear types and aircraft. See Figures 3-17 through 3-29. These curves are based on a jointed edge loading assumption where the load is located either tangent or perpendicular to the joint. Use of the design curves requires four design input parameters: concrete flexural strength, subgrade modulus, gross weight of the design aircraft, and annual departure of the design aircraft. The rigid pavement design curves indicate the thickness of concrete only. Thicknesses of other components of the rigid pavement structure must be determined separately.

a. Concrete Fiexurai Strength. The required thickness of concrete pavement is related to the strength of the concrete used in the pavement. Concrete strength is assessed by the flexural strength, as the primary action of a concrete pavement slab is flexure. Concrete flexural strength should be determined by ASTM C 78 test method. The design flexural strength of the concrete should be based on the age and strength the concrete will be required to have when it is scheduled to be opened to traffic.

b. k Value. The k value is in effect, a spring constant for the material supporting the rigid pavement and is indicative of the bearing capacity of the supporting material.

c. Gross Weight of Design Aircraft. The gross weight of the design aircraft is shown on each design curve. The design curves are grouped in accordance with either main landing gear assembly type or as separate curves for individual aircraft. A wide range of gross weights is shown on all curves to assist in any interpolations which may be required. In all cases, the range of gross weights shown is adequate to cover weights of the aircraft represented.

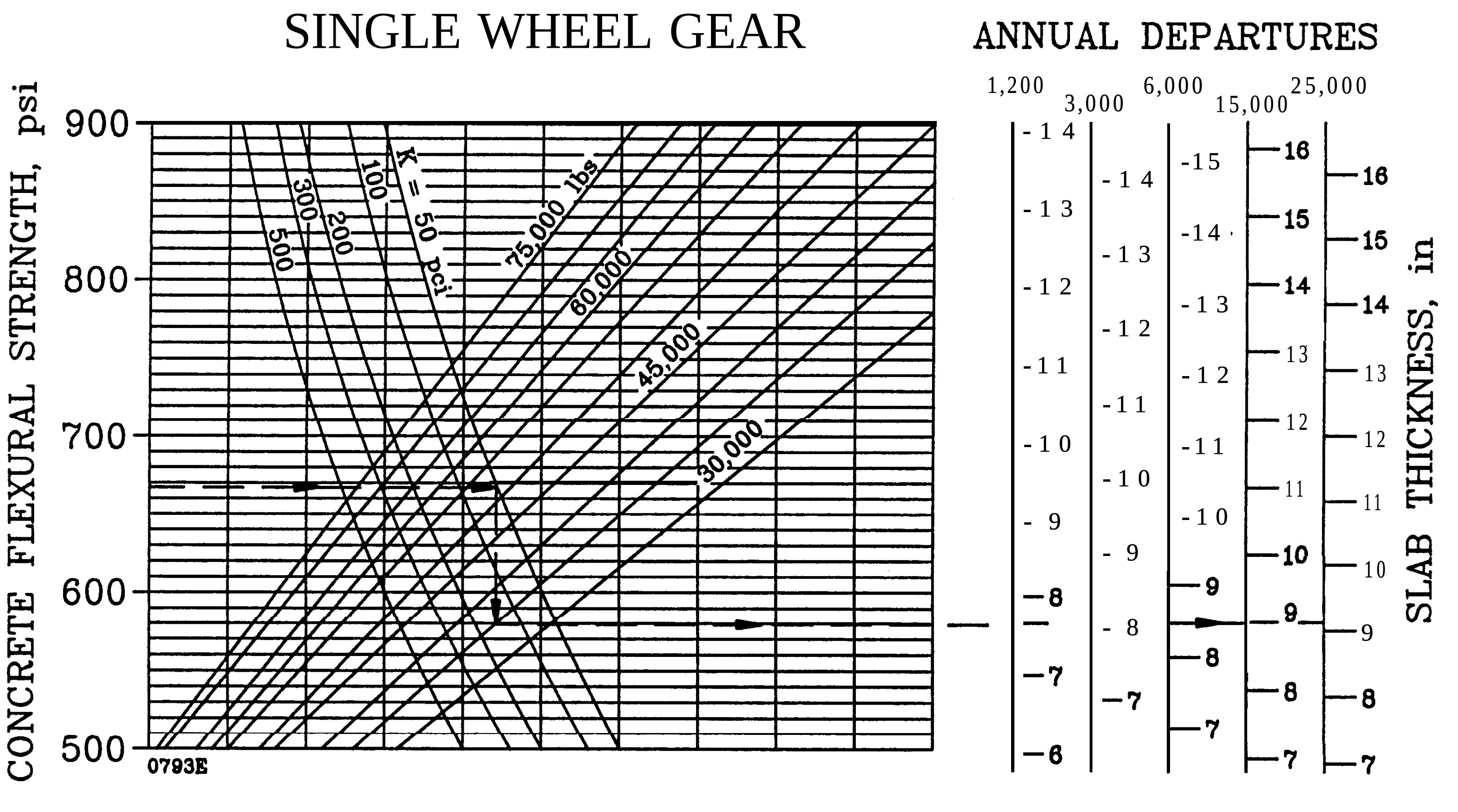
d. Annual Departures of Design Aircraft. The fourth input parameter is annual departures of the design aircraft. The departures should be computed using the procedure explained in paragraph 305.

332. **USE OF DESIGN CURVES.**

a. Rigid Pavement Design Curves. The rigid pavement design curves are constructed such that the design inputs are entered in the same order as they are discussed in paragraph 331. Dashed "chase around lines" are shown on the curves to indicate the order of progression through the curves. Concrete flexural strength is the first input. The left ordinate of the design curve is entered with concrete flexural strength. A horizontal projection is made until it intersects with the appropriate foundation modulus line. A vertical projection is made from the intersection point to the appropriate gross weight of the design aircraft. A horizontal projection is made to the right ordinate showing annual departures. The pavement thickness is read from the appropriate annual departure line. The pavement thickness shown refers to the thickness of the concrete pavement only, exclusive of the subbase. This thickness is that shown as "T" in Figure 3-1, referred to as the critical thickness.

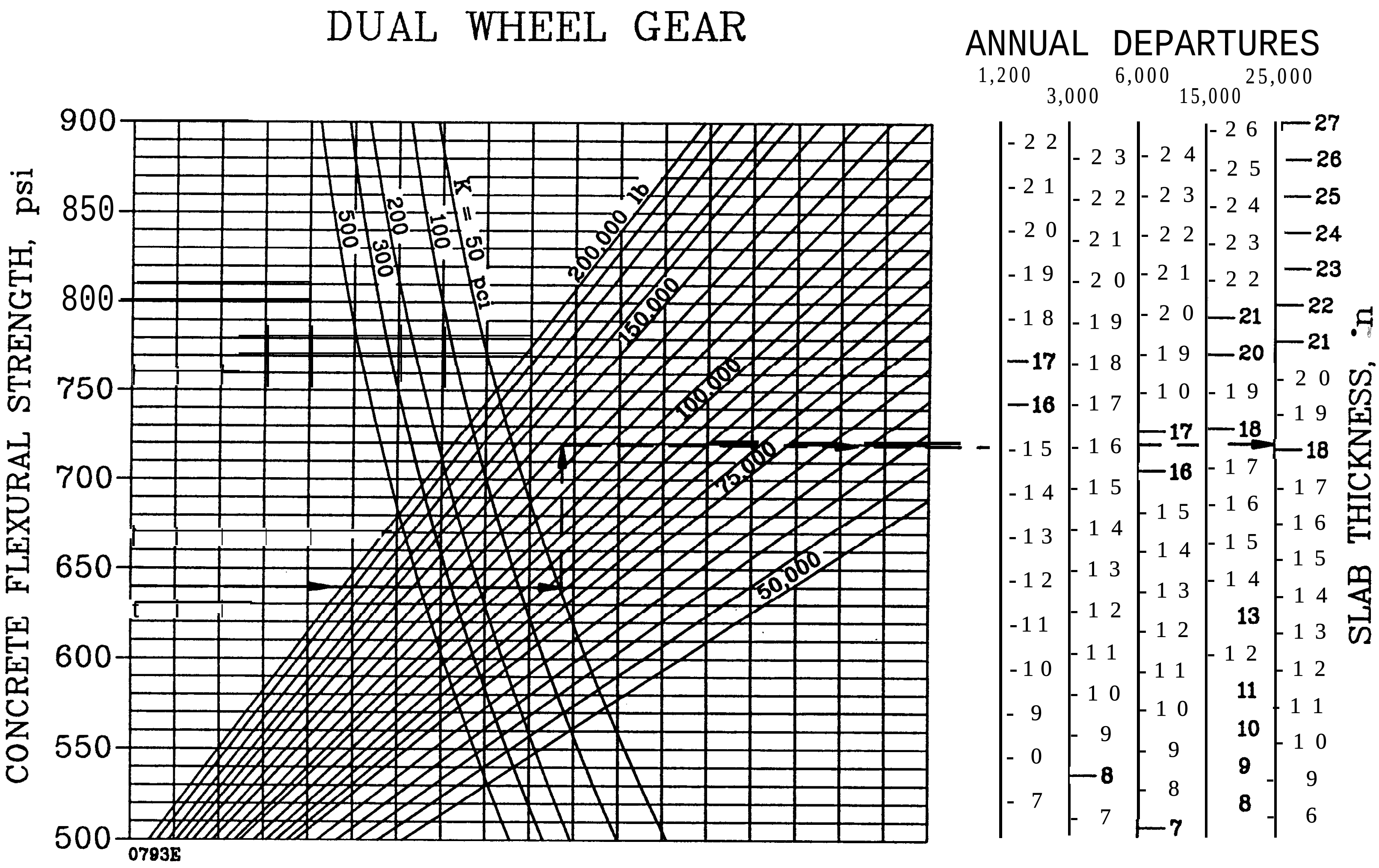
b. Optional Design Curves. When aircraft loadings are applied to a jointed edge, the angle of the landing gear relative to the jointed edge influences the magnitude of the stress in the slab. Single wheel and dual wheel landing gear assemblies produce the maximum stress when the gear is located parallel or perpendicular to the joint. Dual tandem assemblies often produce the maximum stress when positioned at an acute angle to the jointed edge. Figures 3-30 through 3-4 1, have been prepared for dual tandem gears located tangent to the jointed edge but rotated to the angle causing the maximum stress. These design curves can be used to design pavement in areas where aircraft are likely to cross the pavement joints at acute angles such as runway holding aprons, runway ends, runway-taxiway intersections, aprons, etc. Use of Figures 3-30 through 3-41 is optional and should only be applied in areas where aircraft are likely to cross pavement joints at an acute angle and at low speeds.

333. CRITICAL AND NONCRITICAL AREAS. The design curves, Figures 3-17 through 3-41, are used to determine the concrete slab thickness for the critical pavement areas shown as "T" in Figure 3-l. The 0.9T thickness for noncritical areas applies to the concrete slab thickness. For the variable thickness section of the thinned edge and transition section, the reduction applies to the concrete slab thickness. The change in thickness for the transitions should be accomplished over an entire slab length or width. In areas of variable slab thickness, the subbase thickness must be adjusted as necessary to provide surface drainage from the entire subgrade surface. For fractions of an inch of 0.5 or more, use the next higher whole number; for less than 0.5, use the next lower number.



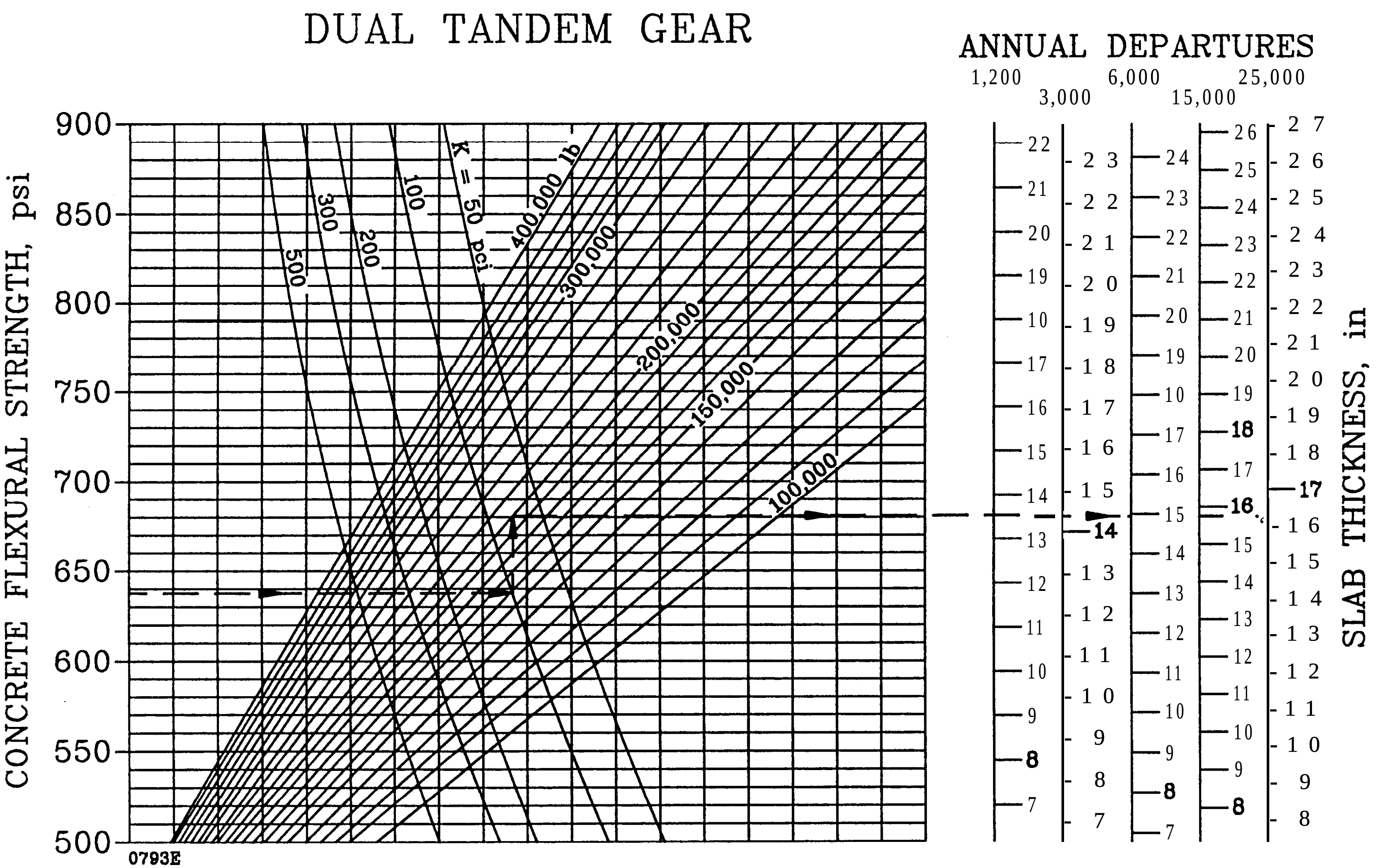
NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m²
1 lb = 0.454 kg   1 pci = 0.272 MN/m³

FIGURE 3-17. RIGID PAVEMENT DESIGN CURVES, SINGLE WHEEL GEAR



NOTE:
1 lb = 0.454 kg 1 inch = 25.4 mm 1 psi = 0.00689 MN/m² 1 pci = 0.2714 MN/m³

FIGURE 3-18. RIGID PAVEMENT DESIGN CURVES, DUAL WHEEL GEAR



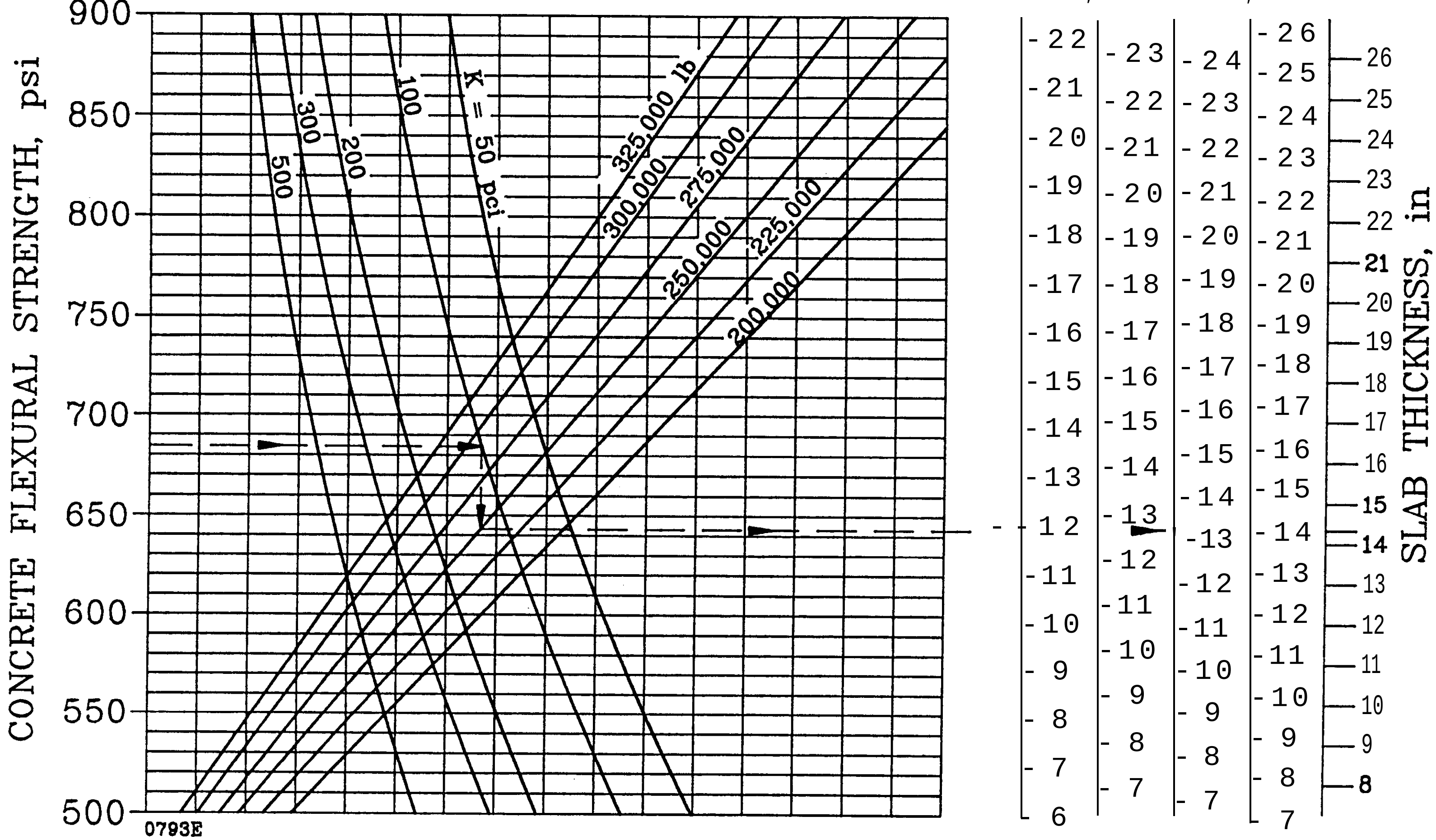
NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg   1 pci = 0.272 MN/m^3

FIGURE 3-19. RIGID PAVEMENT DESIGN CURVES, DUAL TANDEM GEAR

A-300 MODEL B2

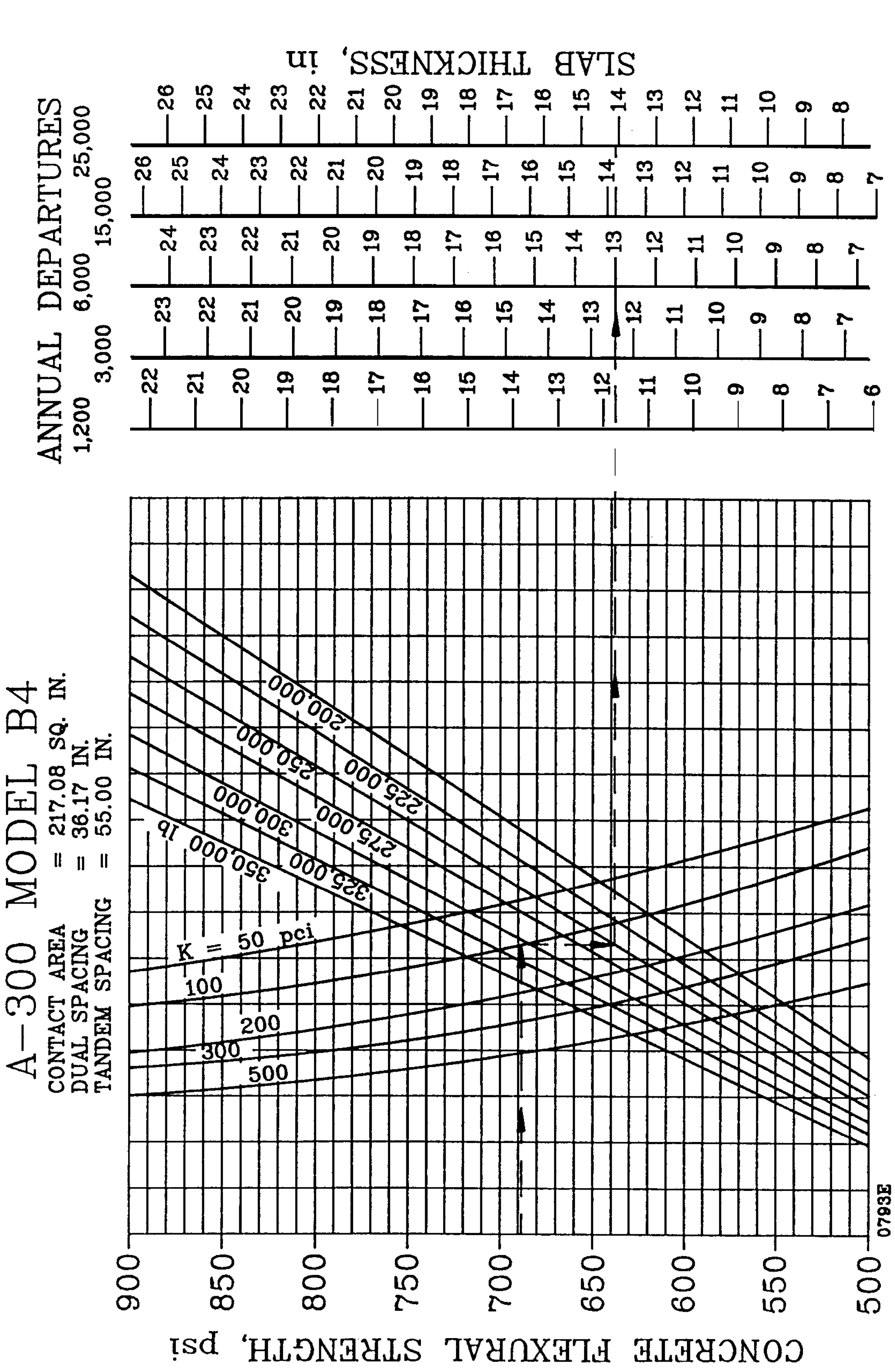
CONTACT AREA = 207.47 SQ. IN.
DUAL SPACING = 34.99 IN.
TANDEM SPACING = 55.00 IN.

ANNUAL DEPARTURES
1,200 3,000 6,000 15,000 25,000



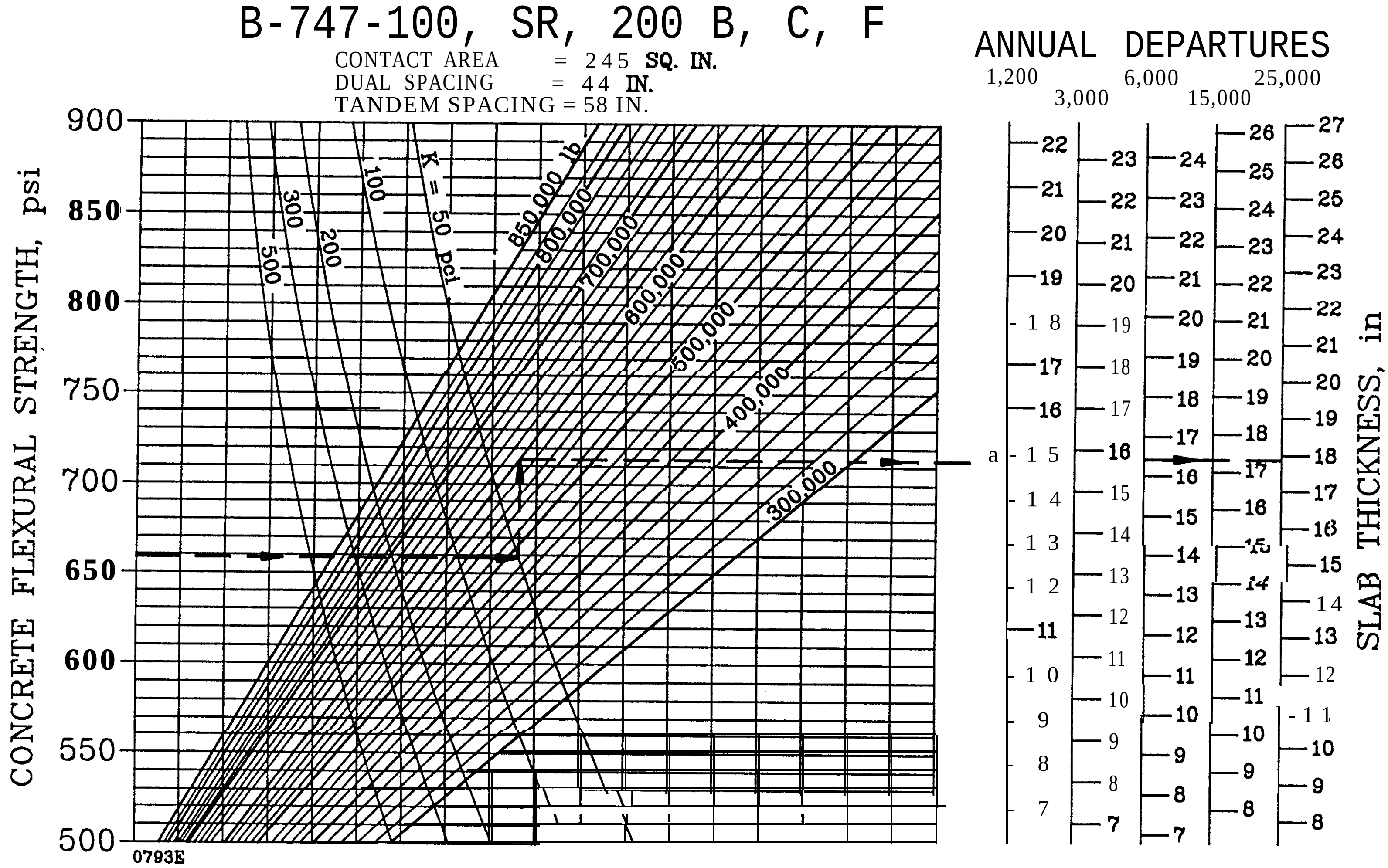
NOTE:
1 inch = 25.4 mm 1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg 1 pci = 0.272 MN/m^3

FIGURE 3-20. RIGID PAVEMENT DESIGN CURVES, A-300 MODEL B2



NOTE:
1 inch = 25.4 mm 1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg 1 pci = 0.272 MN/m^3

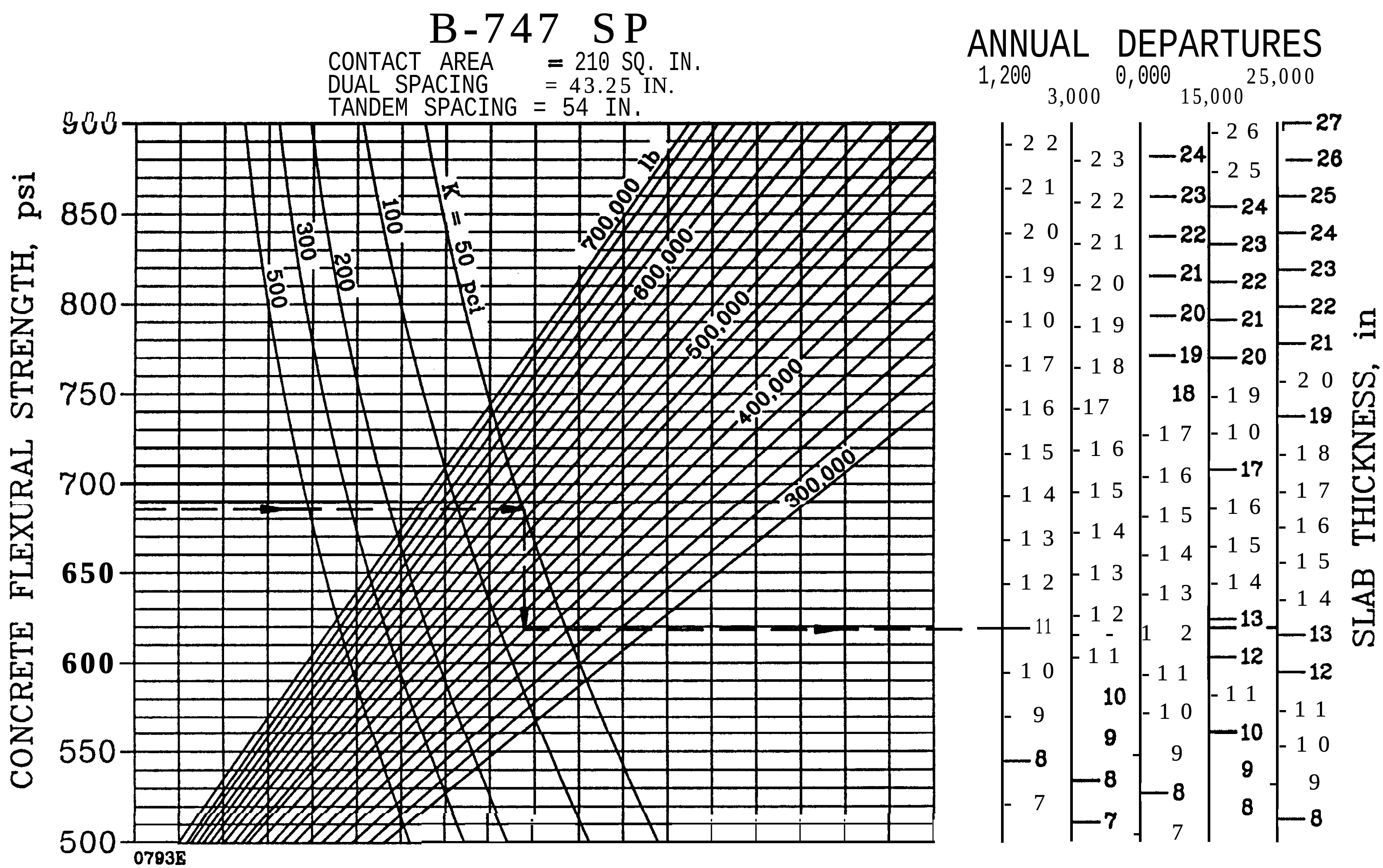
FIGURE 3-21. RIGID PAVEMENT DESIGN CURVES, A-300 MODEL B4



NOTE:

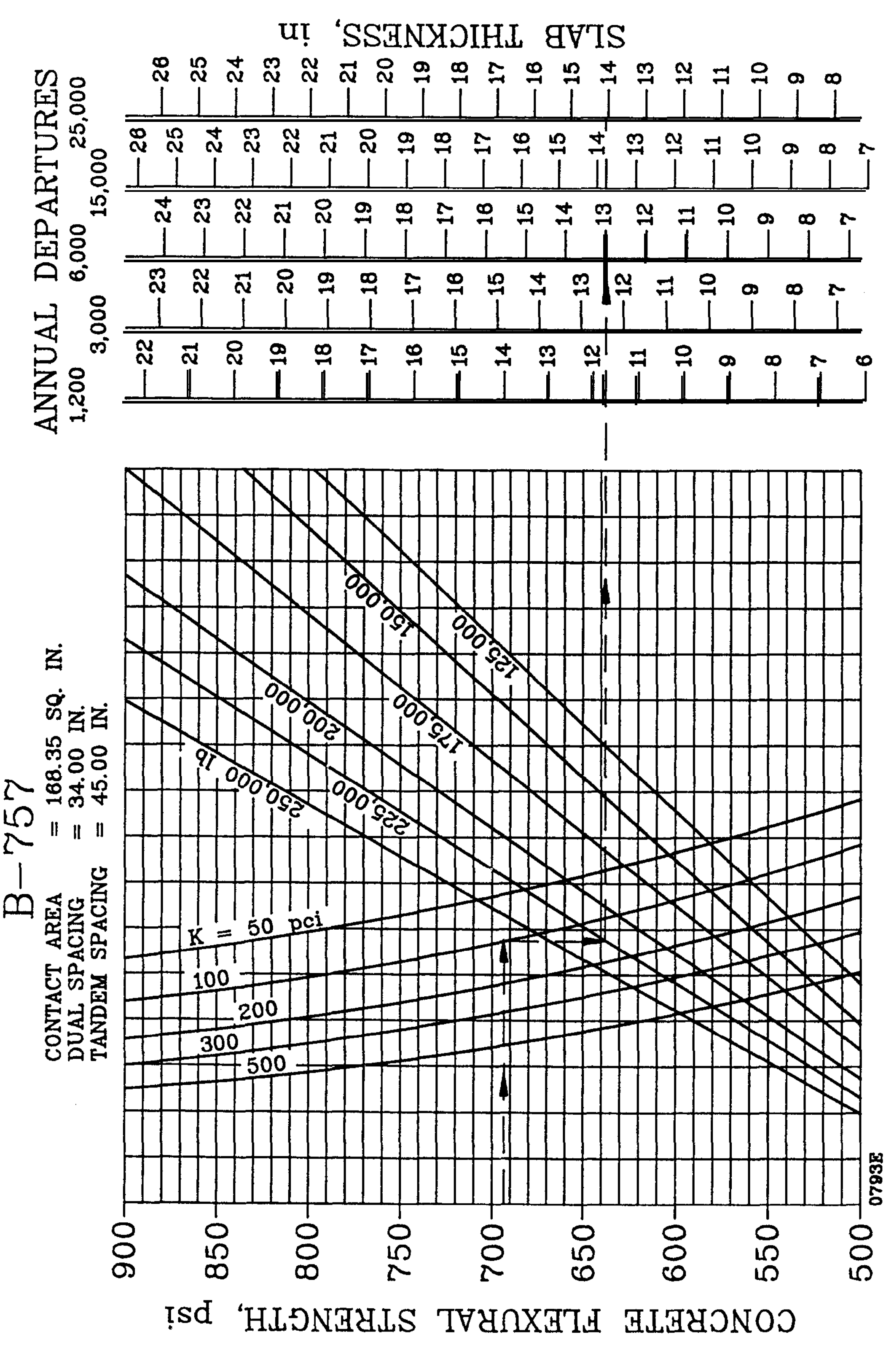
1 inch = 25.4 mm 1 psi = 0.0069 MN/m²
1 lb = 0.454 kg 1 pci = 0.272 MN/m³

FIGURE 3-22. RIGID PAVEMENT DESIGN CURVES, B-747-100, SR, 200 B, C, F



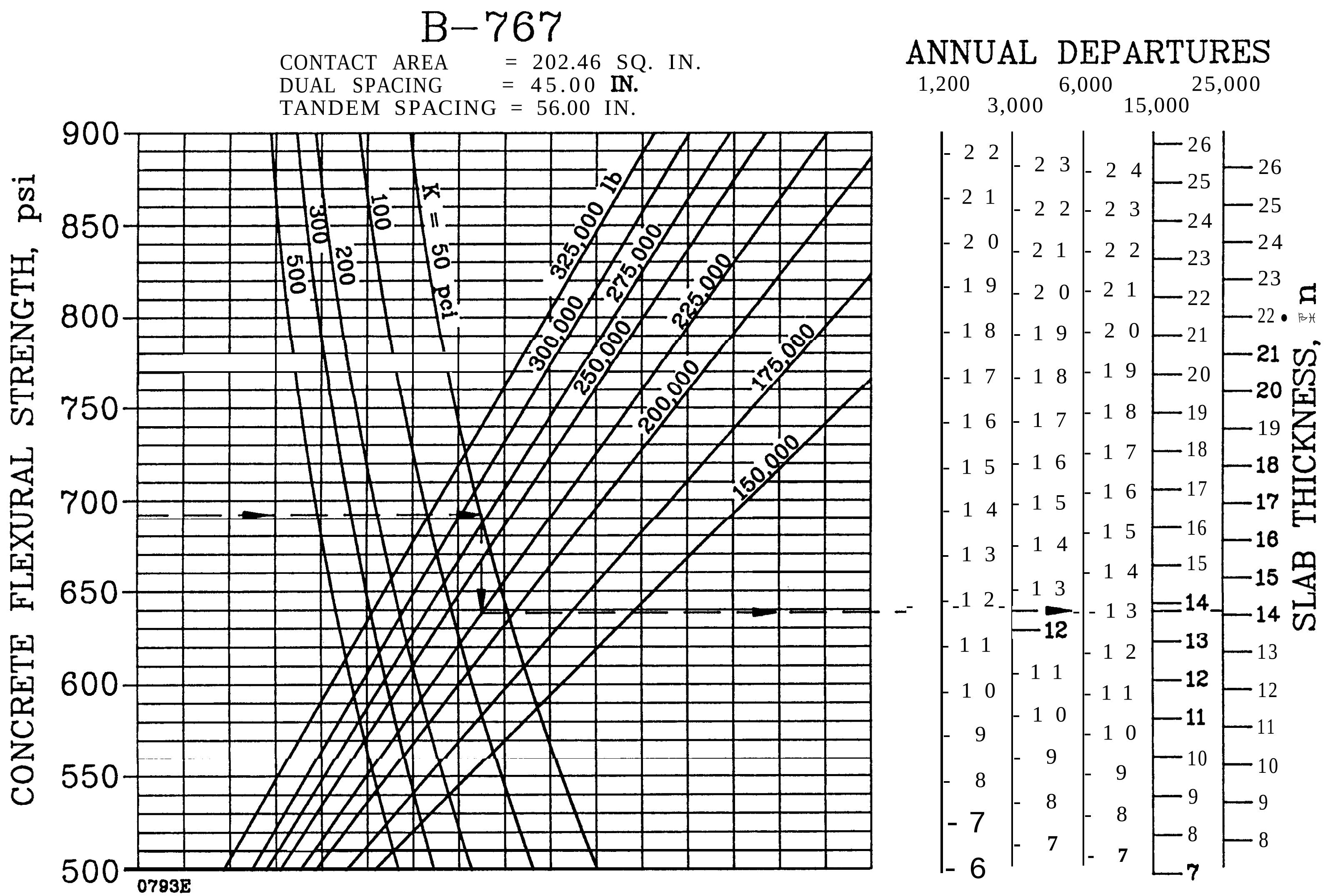
NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m²
1 lb = 0.454 kg   1 pci = 0.272 MN/m³

FIGURE 3-23. RIGID PAVEMENT DESIGN CURVES, B-747-SP



NOTE:
1 inch = 25.4 mm 1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg 1 pci = 0.272 MN/m^3

FIGURE 3-24. RIGID PAVEMENT DESIGN CURVES, B-757

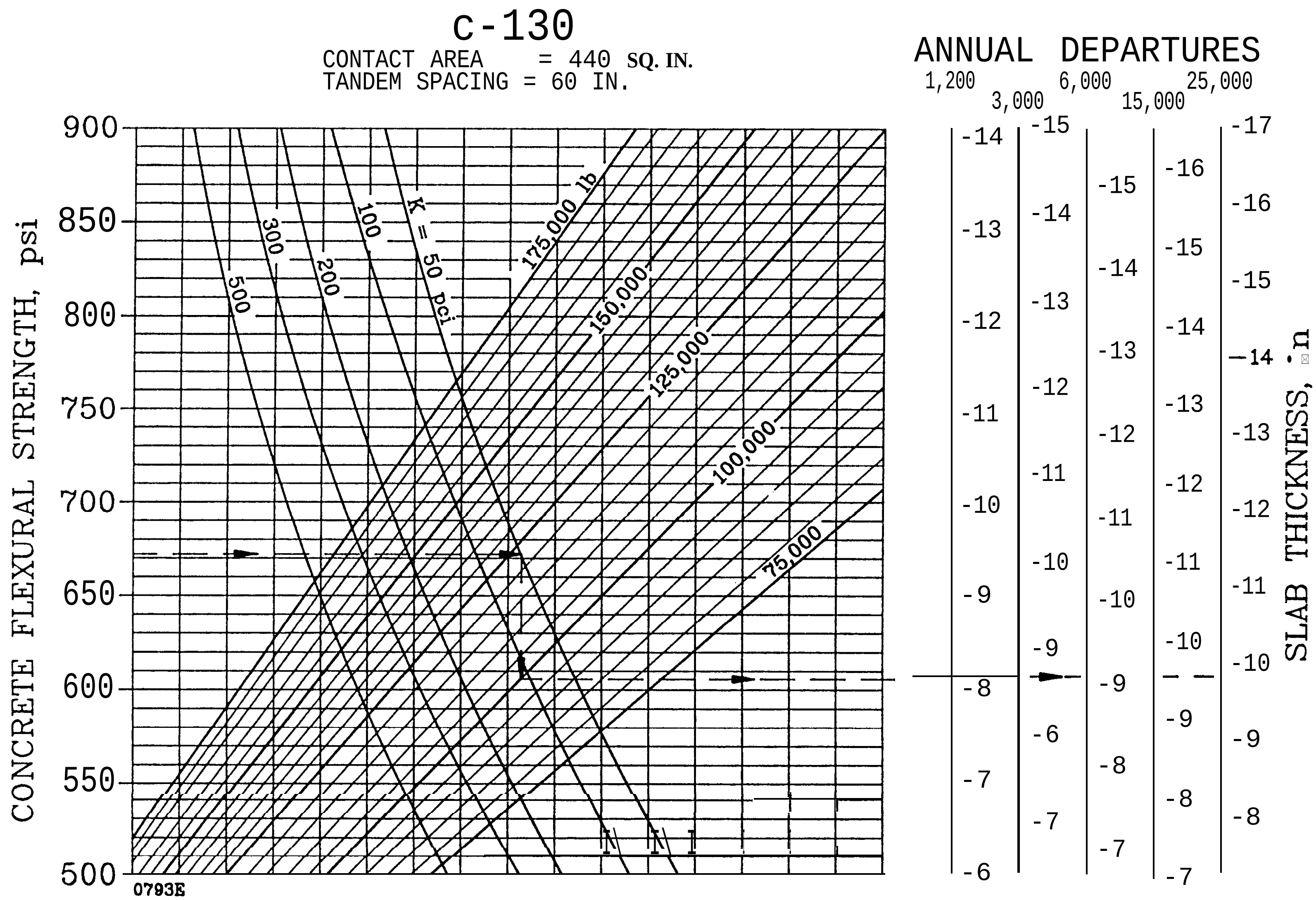


NOTE:

1 inch = 25.4 mm 1 psi = 0.0069 MN/m²

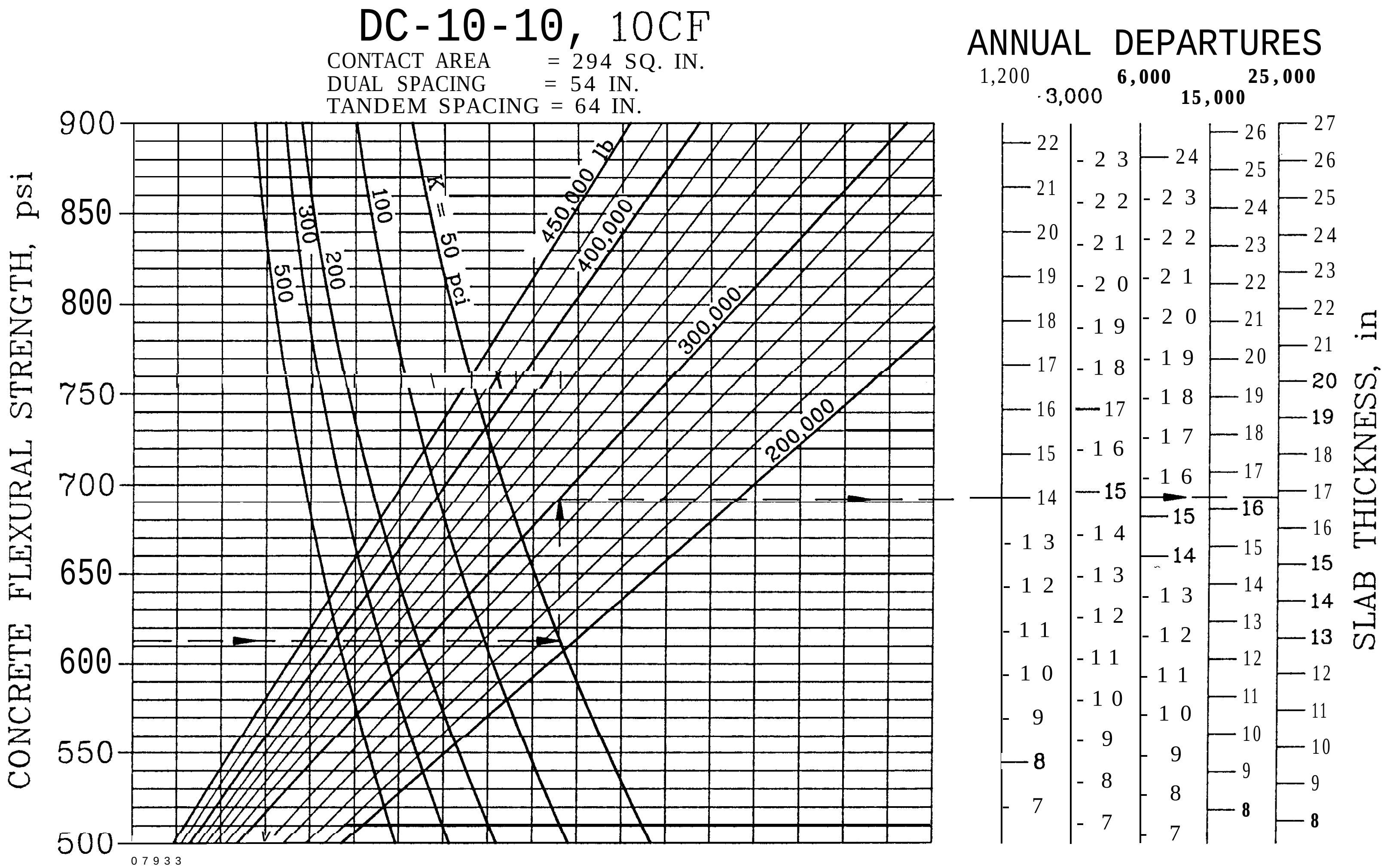
1 lb = 0.454 kg 1 pci = 0.272 MN/m³

FIGURE 3-25. RIGID PAVEMENT DESIGN CURVES, B-767



NOTE:
1 inch = 25.4 mm 1 psi = 0.0069 MN/m²
1 lb = 0.454 kg 1 pci = 0.272 MN m³

FIGURE 3-26. RIGID PAVEMENT DESIGN CURVES, C-130

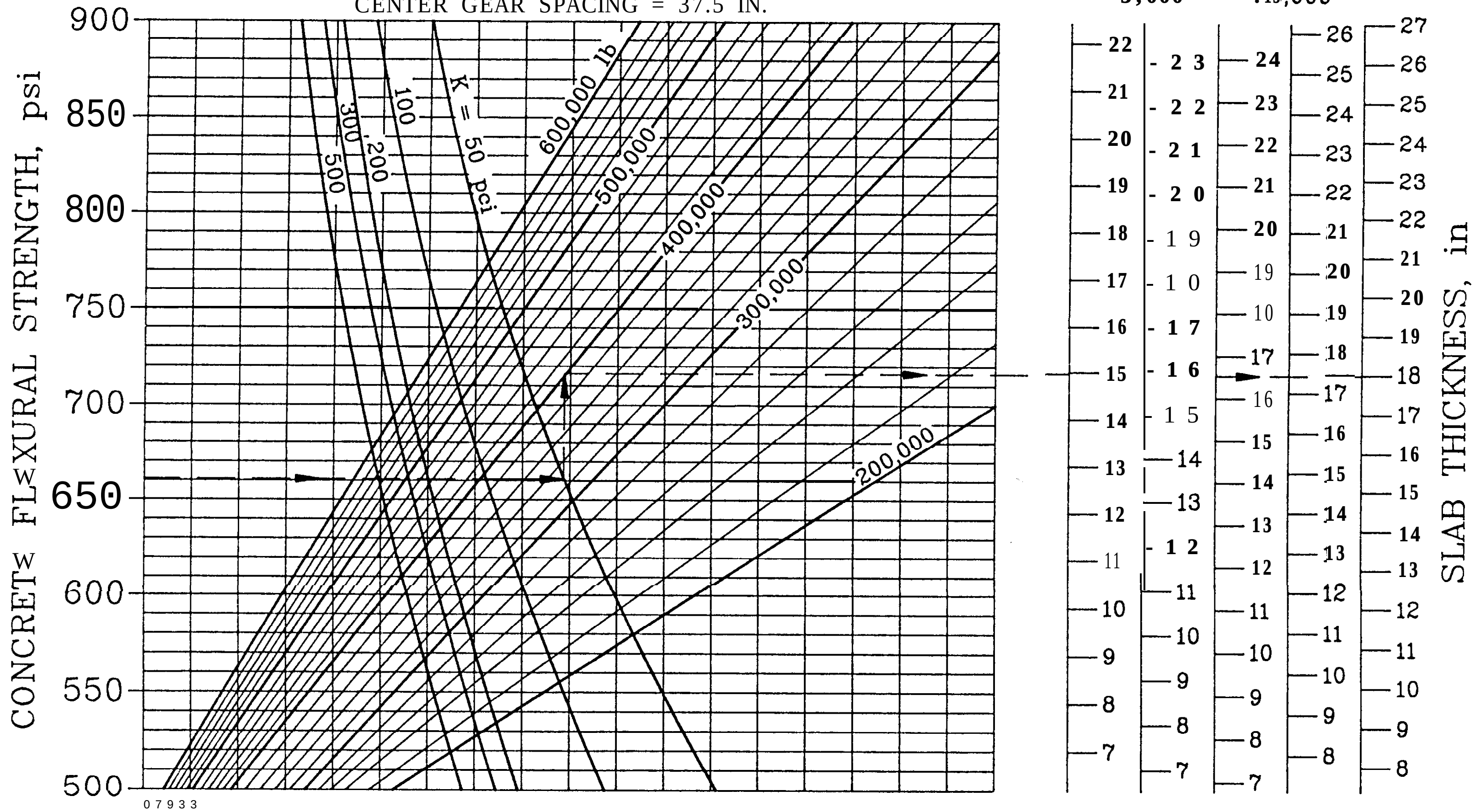


NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m²
1 lb = 0.454 kg   1 pci = 0.272 MN/m³

FIGURE 3-27. RIGID PAVEMENT DESIGN CURVES, DC 10-10, 10CF

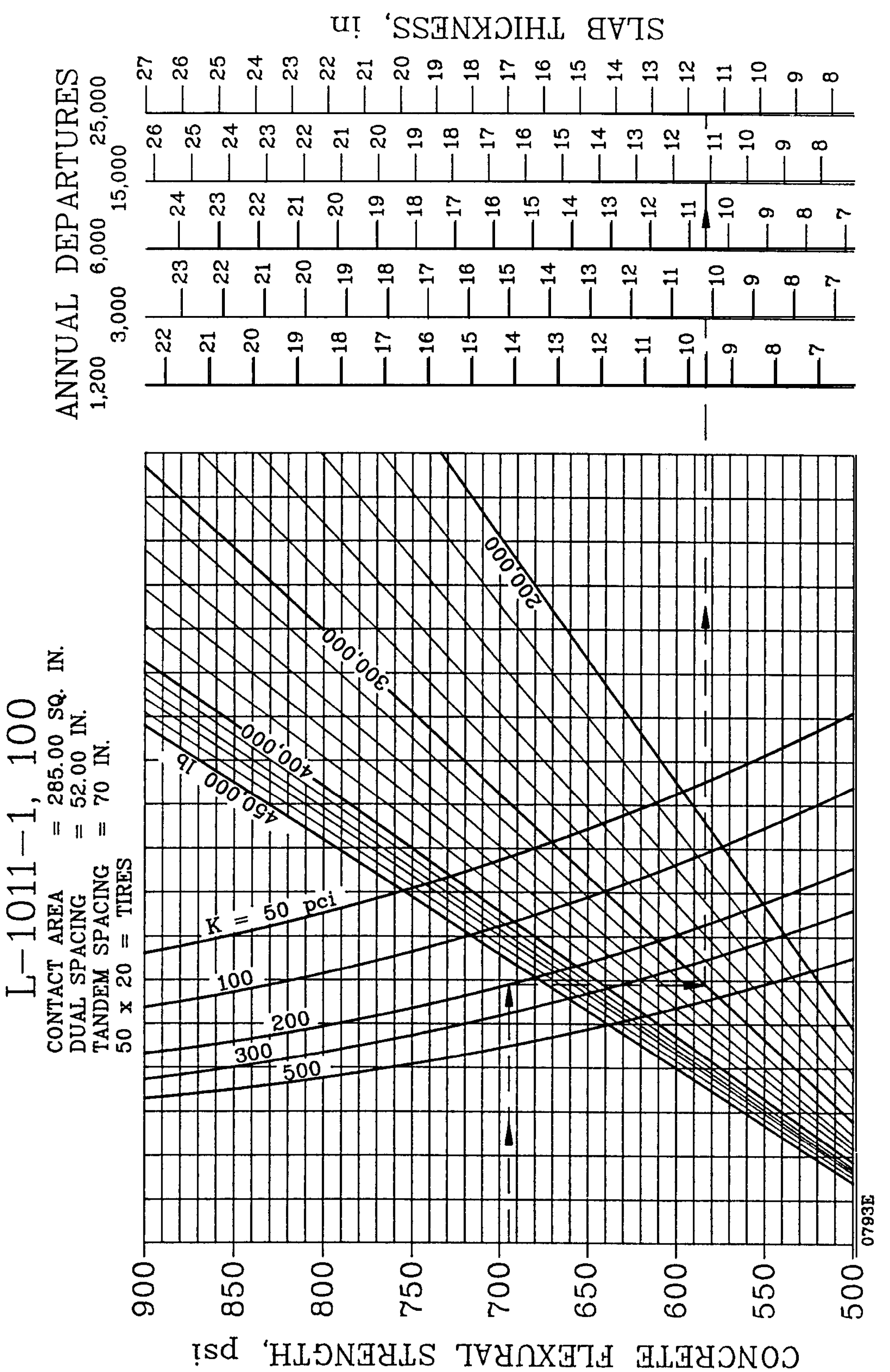
DC-10-30, 30CF, 40, 40CF

CONTACT AREA = 331 SQ. IN.
DUAL SPACING = 54 IN.
TANDEM SPACING = 64 IN.
CENTER GEAR SPACING = 37.5 IN.



NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg   1 pci = 0.272 MN/m^3

FIGURE 3-28. RIGID PAVEMENT DESIGN CURVES, DC 10-30, 30CF, 40, 40CF



NOTE:
1 inch = 25.4 mm 1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg 1 pci = 0.272 MN/m^3

FIGURE 3-29. RIGID PAVEMENT DESIGN CURVES, L-1011-1, 100

L-1011-100, 200

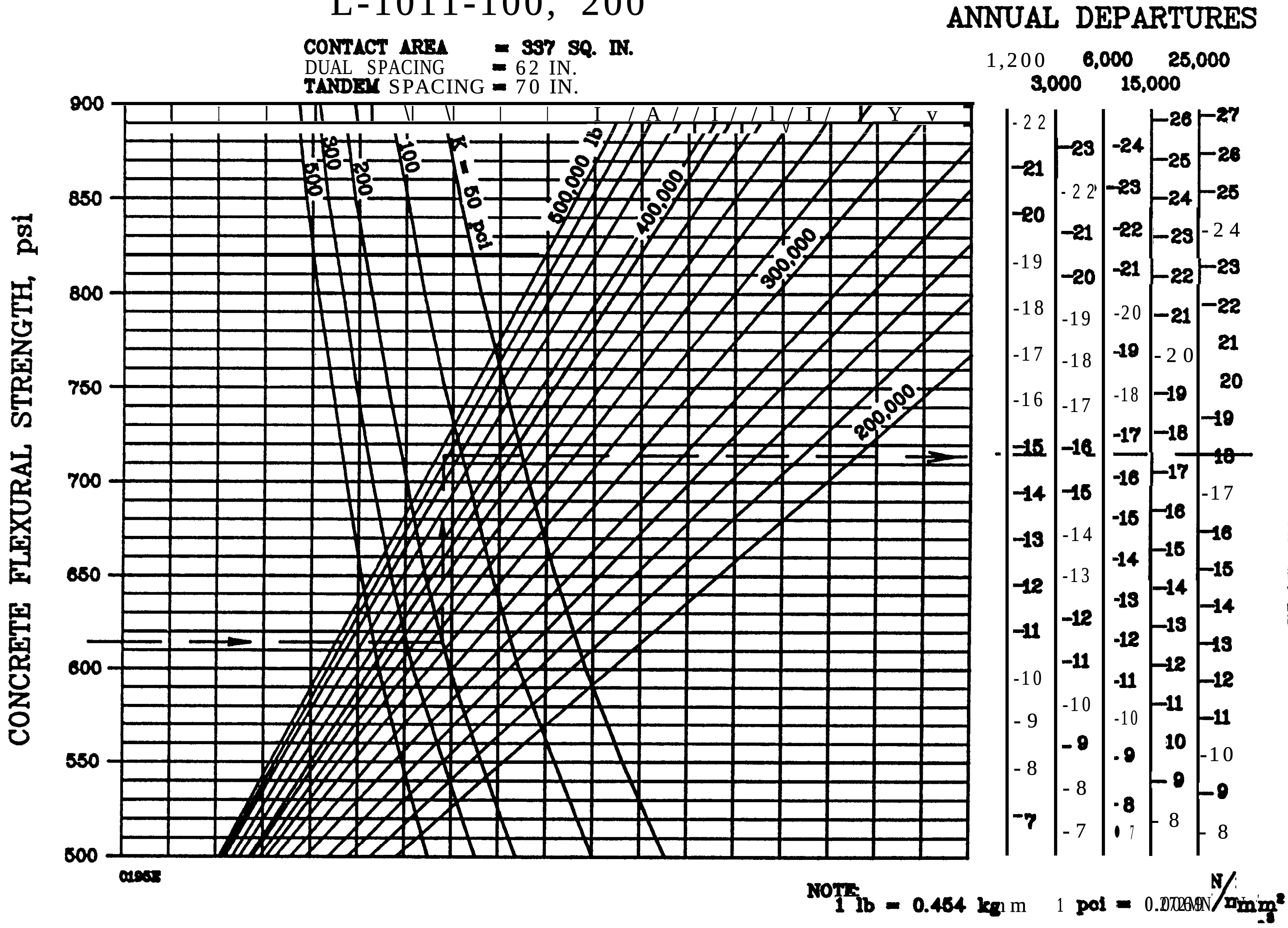
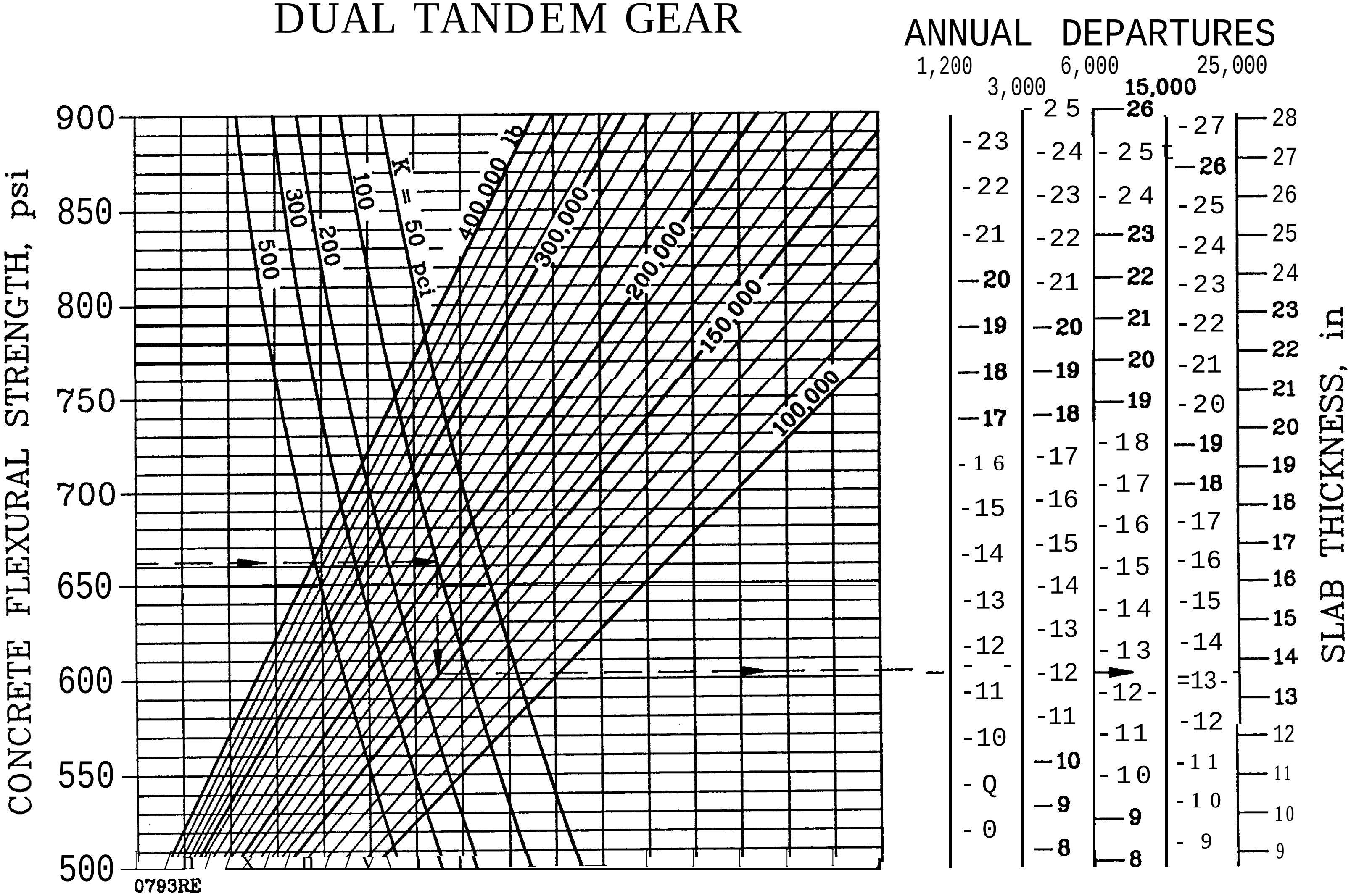


FIGURE 3-30. RIGID PAVEMENT DESIGN CURVES, L-1011-100,200

DUAL TANDEM GEAR



NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m²
1 lb = 0.454 kg   1 pci = 0.272 MN/m³

FIGURE 3-31. OPTIONAL RIGID PAVEMENT DESIGN CURVES, DUAL TANDEM GEAR

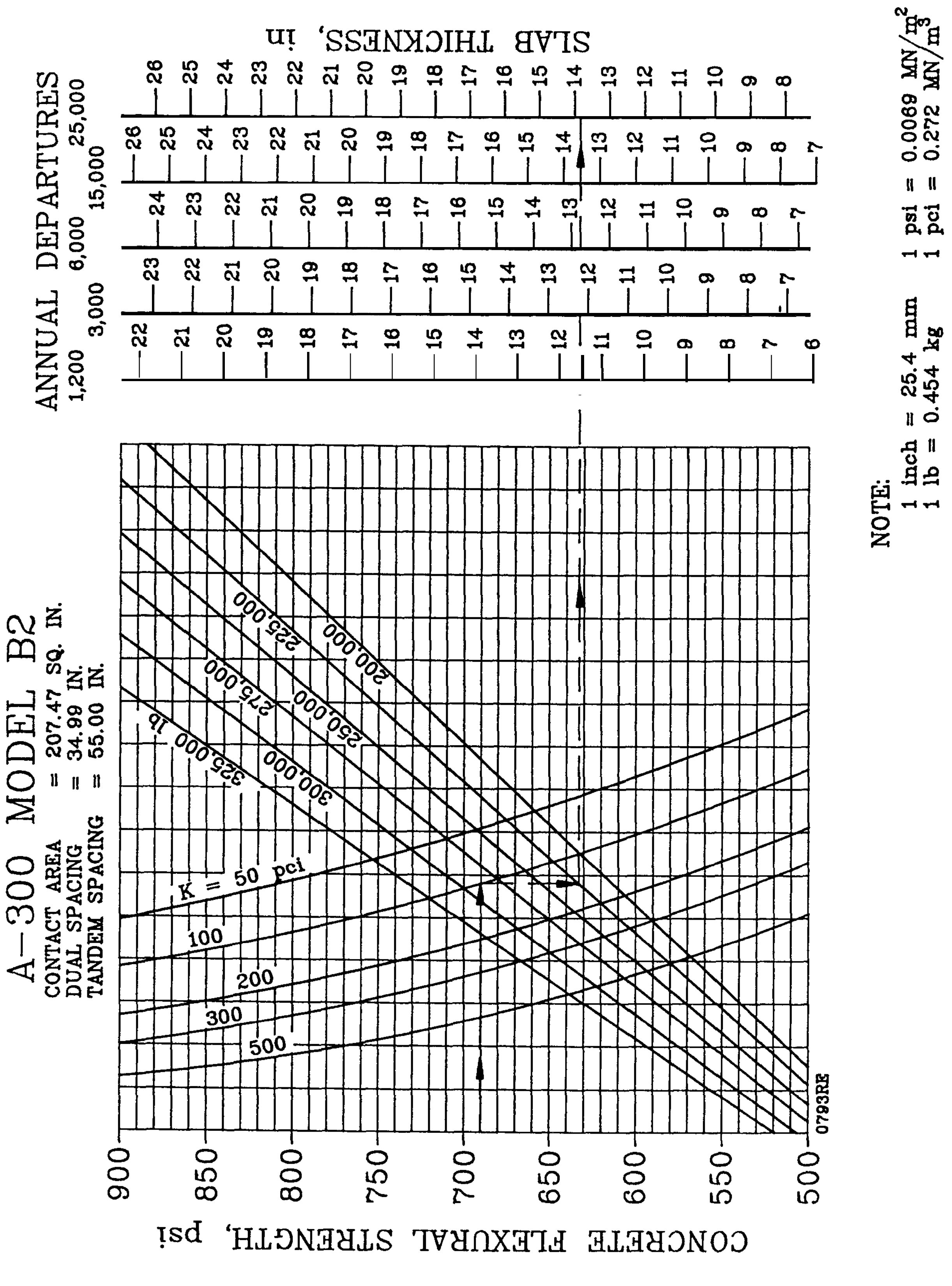
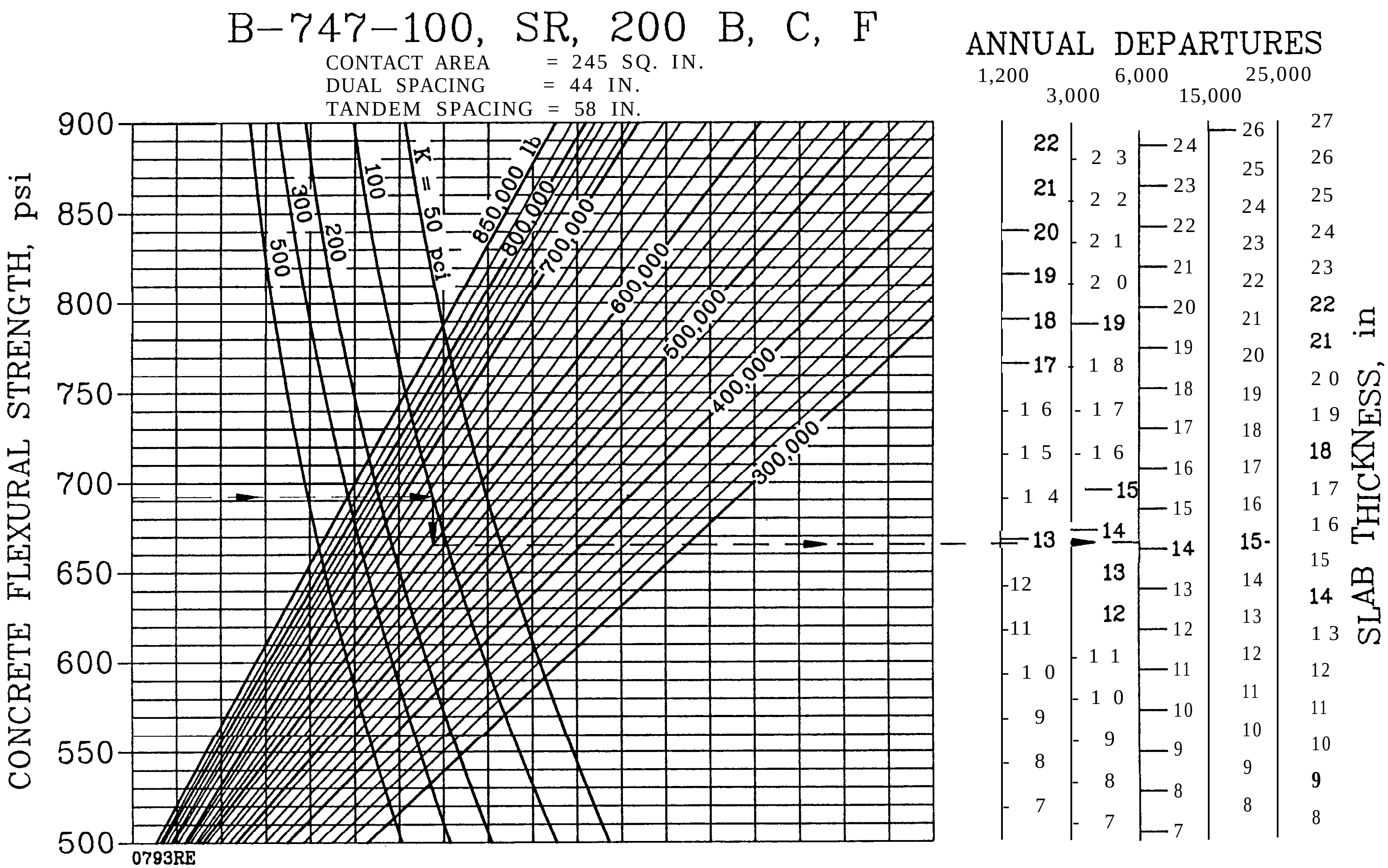


FIGURE 3-32. OPTIONAL RIGID PAVEMENT DESIGN CURVES, A-300 MODEL B2

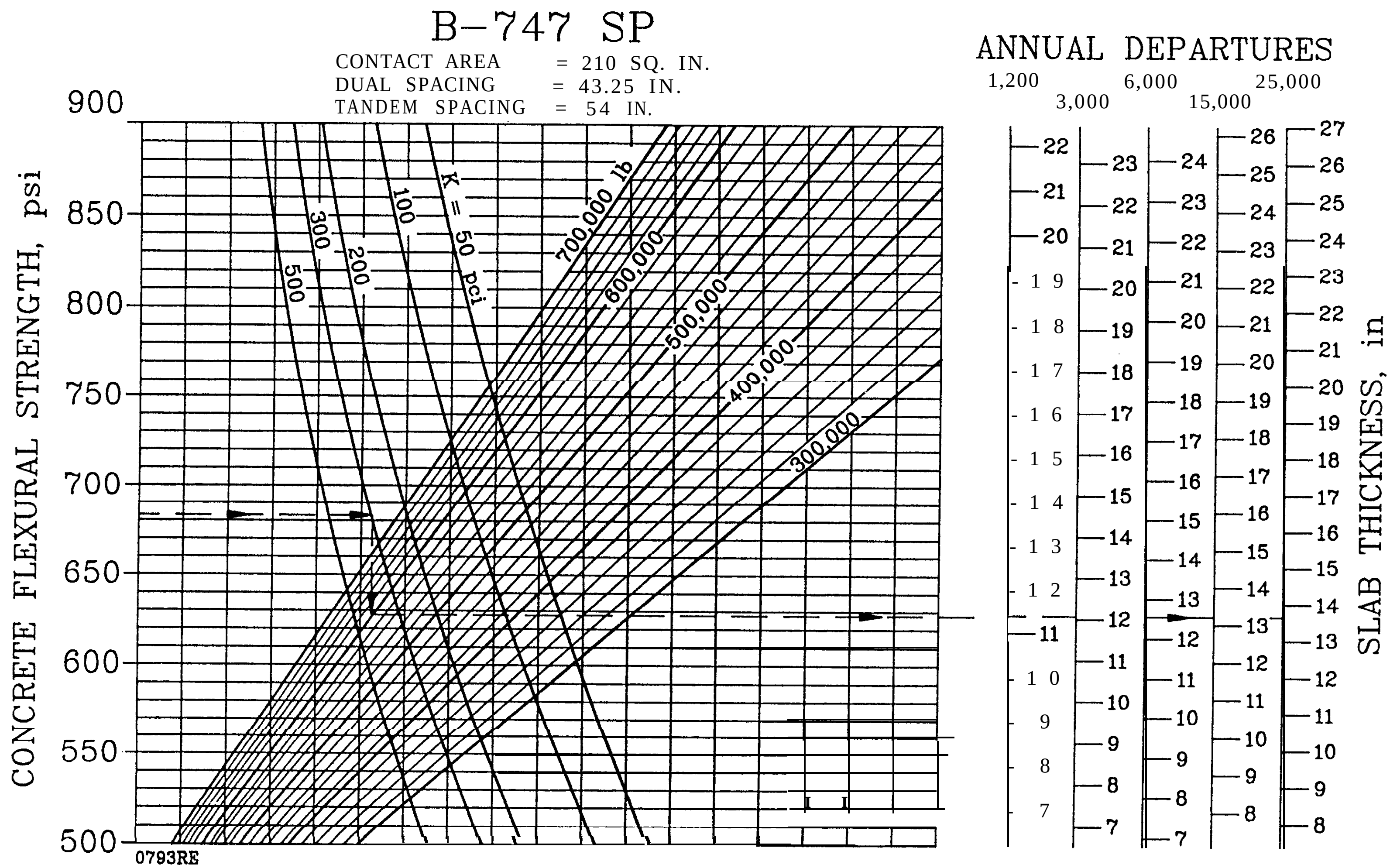


NOTE:

1 inch = 25.4 mm 1 psi = 0.0069 MN/m²

1 lb = 0.454 kg 1 pci = 0.272 MN/m³

FIGURE 3-33. OPTIONAL RIGID PAVEMENT DESIGN CURVES, B-747-100, SR, 200 B, C, F



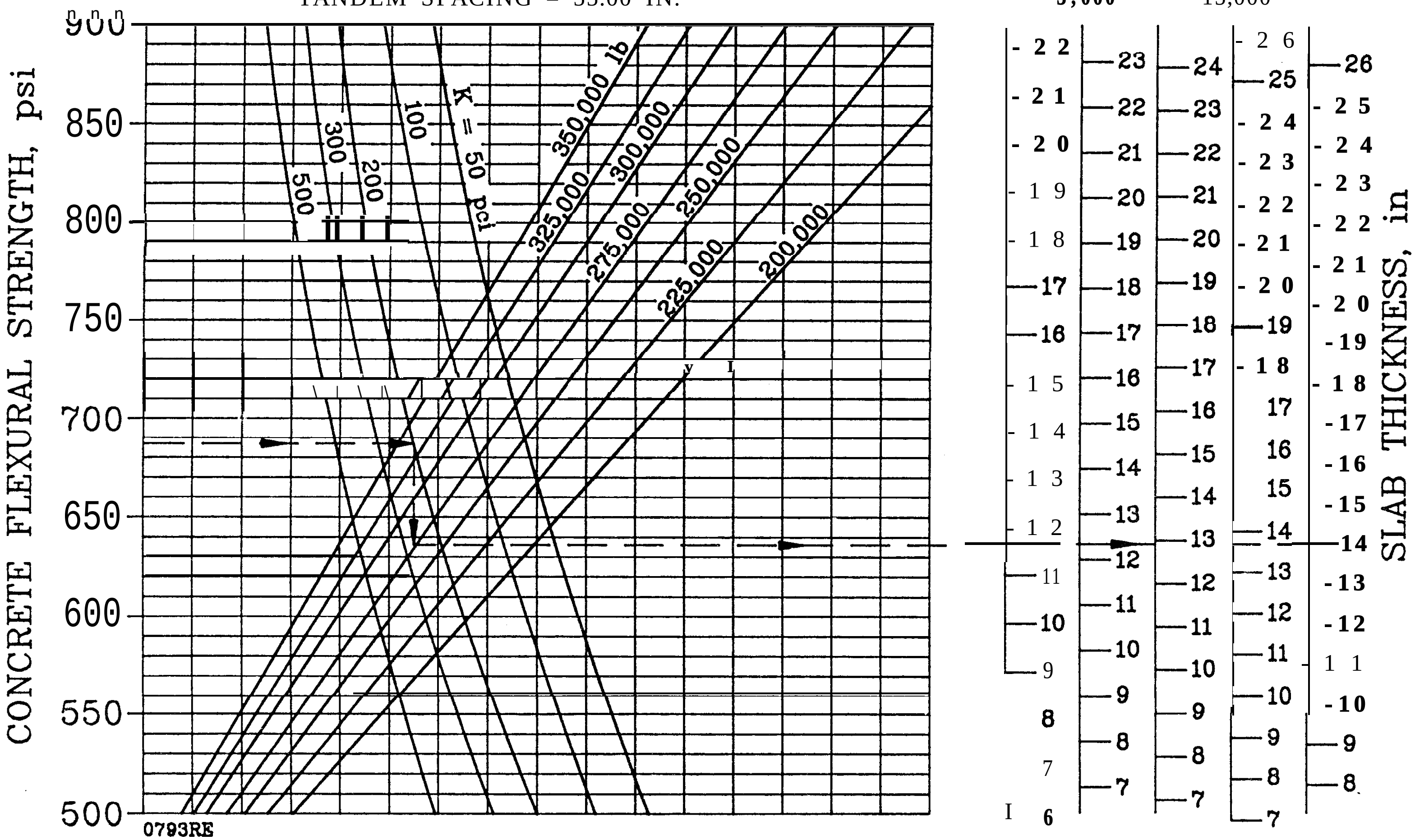
NOTE:

1 inch = 25.4 mm	1 psi = 0.0069 MN/m²
1 lb = 0.454 kg	1 pci = 0.272 MN/m³

FIGURE 3-34. OPTIONAL RIGID PAVEMENT DESIGN CURVES, B-747-SP

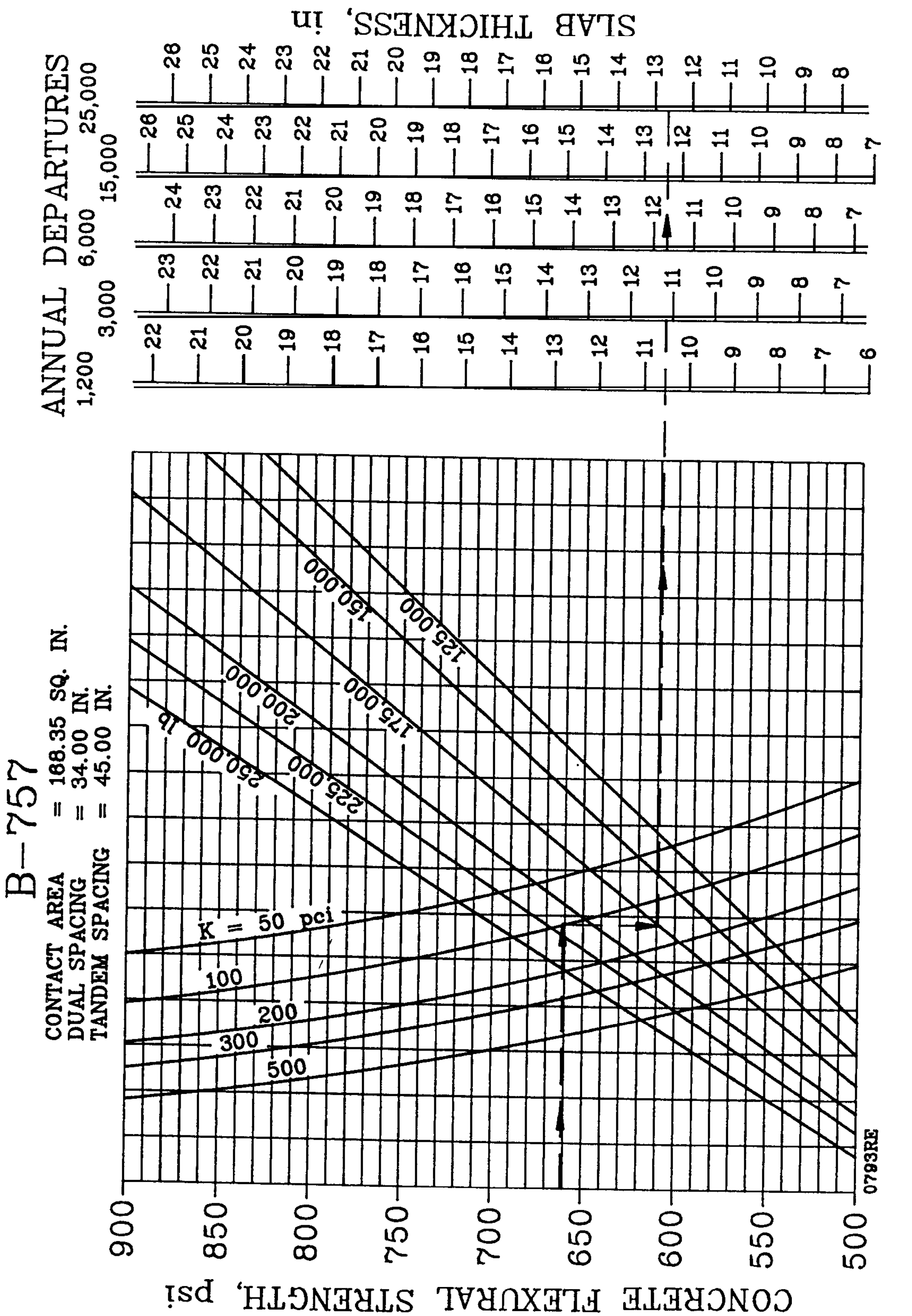
A-300 MODEL B4

CONTACT AREA = 217.08 SQ. IN.
DUAL SPACING = 36.17 IN.
TANDEM SPACING = 55.00 IN.



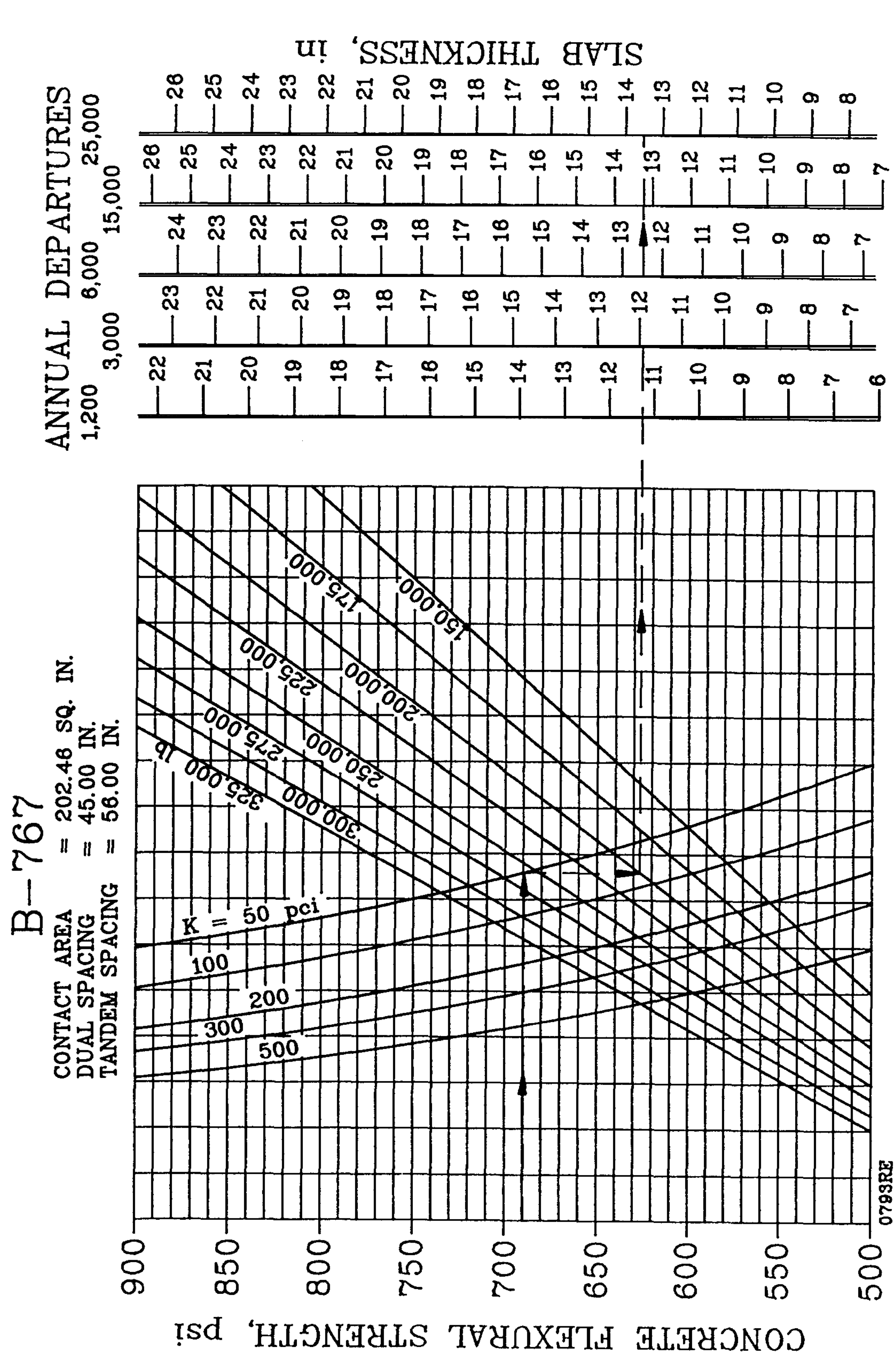
NOTE:
1 lb = 0.454 kg   1 inch = 25.4 mm   1 psi = 0.00689 MN/m²   1 pci = 0.2714 MN/m³

FIGURE 3-35. OPTIONAL RIGID PAVEMENT DESIGN CURVES, A-300 Model B4



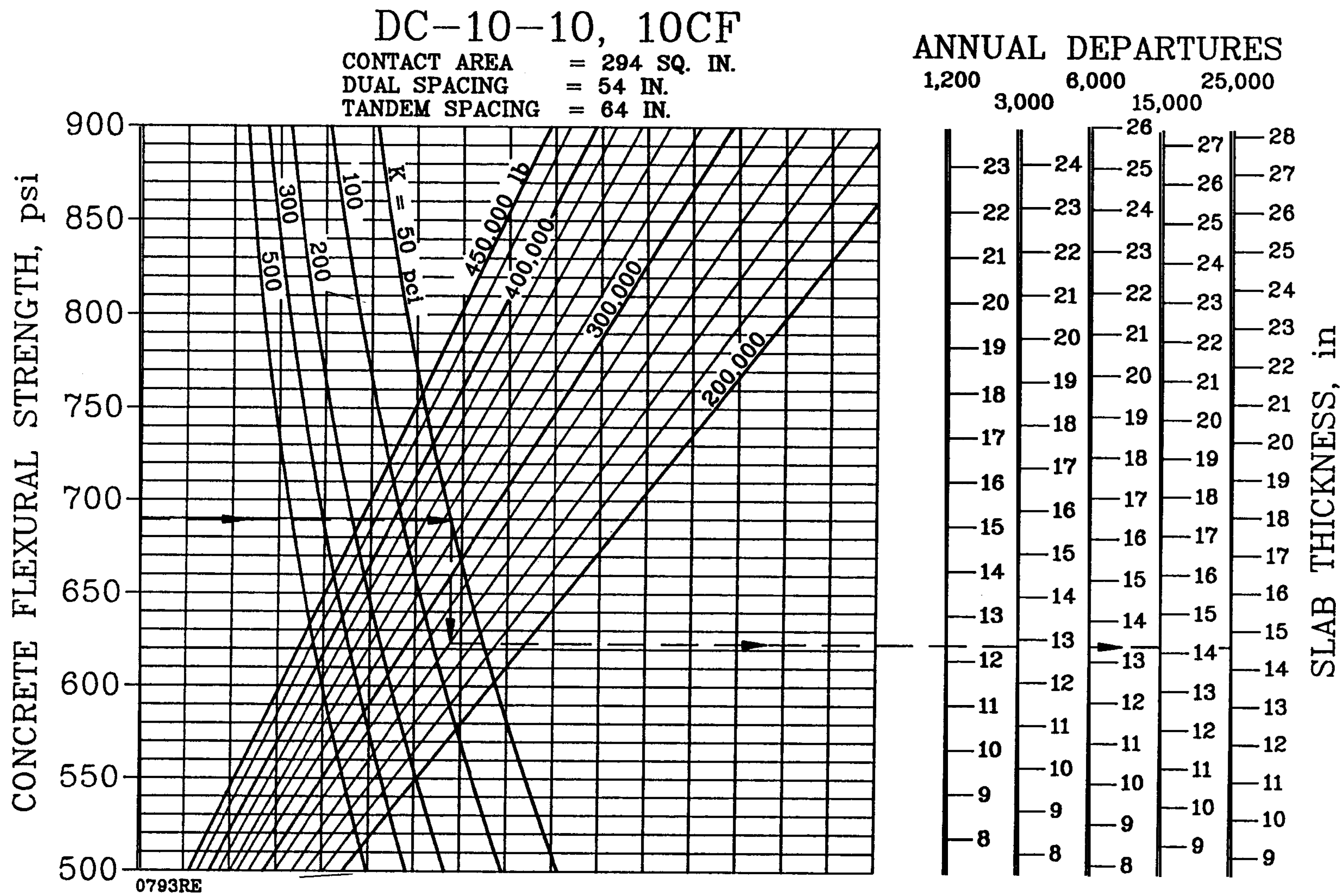
NOTE:
1 inch = 25.4 mm   1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg   1 pci = 0.272 MN/m^3

FIGURE 3-36. OPTIONAL RIGID PAVEMENT DESIGN CURVES, B-757



NOTE:
1 inch = 25.4 mm
1 lb = 0.454 kg
1 psi = 0.0069 MN/m^2
1 pci = 0.272 MN/m^3

FIGURE 3-37. OPTIONAL RIGID PAVEMENT DESIGN CURVES, B-767

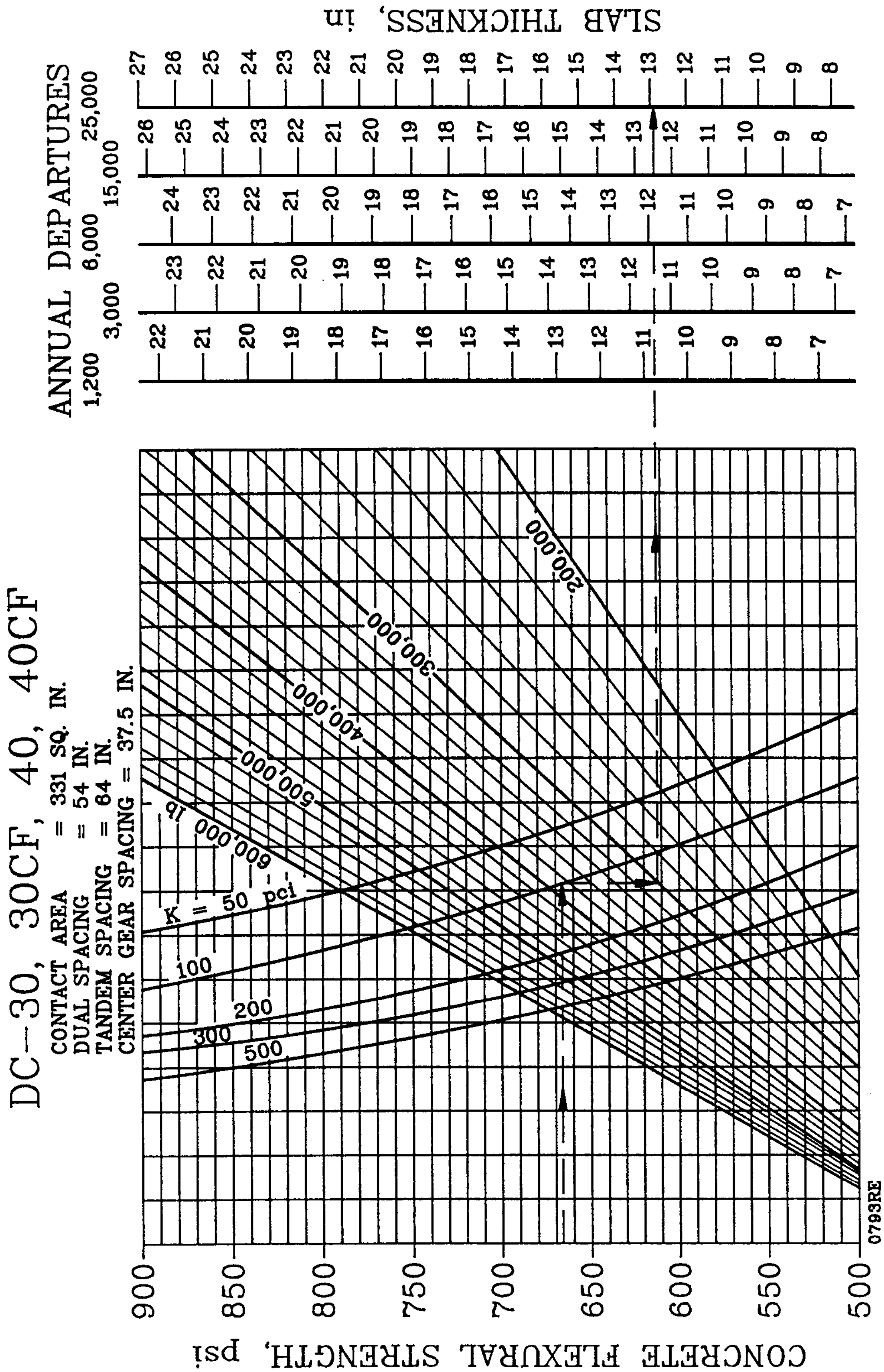


NOTE:

1 inch = 25.4 mm 1 psi = 0.0069 MN/m^2

1 lb = 0.454 kg 1 pci = 0.272 MN/m^3

FIGURE 3-38. OPTIONAL RIGID PAVEMENT DESIGN CURVES, DC10-10, 10CF



NOTE:
1 inch = 25.4 mm 1 psi = 0.0069 MN/m^2
1 lb = 0.454 kg 1 pci = 0.272 MN/m^3

FIGURE 3-39. OPTIONAL RIGID PAVEMENT DESIGN CURVES, DC-10-30, 30CF, 40, 40CF