AN ORDINANCE No. 90-O-107

ADOPTING DESIGN AND CONSTRUCTION STANDARDS FOR EXISTING AND NEW OFF-STREET PARKING AREAS AND REQUIRING BUILDING PERMITS AND CONSTRUCTION PLANS FOR CONSTRUCTION OF OFF-STREET PARKING AREAS (WITH THE EXCEPTION OF THOSE USED IN CONJUNCTION WITH A SINGLE FAMILY RESIDENCE); PROVIDING FOR PUBLICATION AND EFFECTIVE DATE.

WHEREAS, the City Engineer recommends design and construction standards for existing and new off-street parking areas to ensure safe, convenient, and long lasting parking areas for citizens; and

WHEREAS, the City Engineer and the Building Official recommend that the enforcement of off-street parking area construction standards be by the issuance of building permits and submittal of construction plans for existing and new off street parking areas; and

WHEREAS, the City Engineer recommends that owners of off-street parking areas (with the exception of owners of off-street parking areas used in conjunction with single family residences) be required to comply with the construction standards for off-street parking areas, entitled "Layout and Design Standards for Parking Lots," and attached hereto as Exhibit A; and

WHEREAS, the City Council accepts the recommendations of the City Engineer and the City Building Official as stated above, and finds that existing and new off-street parking areas (with the exception of those used in conjunction with single family residences) should meet the construction standards set forth in Exhibit A, and that building permits and construction plans should be required for all existing and new off-street parking area construction.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LAREDO THAT:

Section 1: Any existing or new off-street parking area not used in conjunction with a single family residence shall meet the construction and design standards for that type of off-street parking area as contained in the document entitled "Layout and Design Standards for Parking Lots," attached hereto as Exhibit A, and incorporated herein, within ninety (90) days of the effective date of this ordinance.

Section 2: A building permit is required for the construction of any new, or on any existing, off-street parking area after the effective date of this ordinance unless one has already been issued therefor in conjunction with construction of a building on the same lot as the off-street parking area.

AN ORDINANCE ADOPTING DESIGN AND CONSTRUCTION STANDARDS FOR EXISTING AND NEW OFF-STREET PARKING AREAS AND ... DATE.

Section 3: After the effective date of this ordinance, there shall be a certified survey of, and construction plans for, any proposed off-street parking area, or any existing off-street parking area on which construction is proposed. Such survey and construction plans shall be submitted to the Building Official as part of the building permit application. The certified survey and construction plans shall be reviewed and approved by the City Engineer and the City Building Official before the issuance of a building permit for the construction of or on the off-street parking area.

Section 4: This ordinance shall be published as provided in Section 2.09(D) of the Charter of the City of Laredo and be in force and effect from the date of publication.

PASSED BY THE CITY COUNCIL AND APPROVED BY THE MAYOR ON THIS THE 16th DAY OF July, 1990.

ALDO TATANGELO
MAYOR

ATTEST:

GUSTAVO GUEVARA, JR.
CITY SECRETARY

APPROVED AS TO FORM:

ANTHONY C. McGETTRICK
CITY ATTORNEY

BY: Deborah Hibbard
DEBORAH HIBBARD
ASSISTANT CITY ATTORNEY

PUBLISHED 7-20-1990

Ref. 90-0-107

Parking

Layout
and
design
standards
for
parking
lots

CITY OF LAREDO

ENGINEERING DEPT.

JUNE 1990

EXHIBIT A

STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF PARKING LOTS

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PARKING LAYOUT

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foreword

The purpose of this manual is to provide for standard specifications in the design and layout of off-street parking facilities.

The tendency when designing parking areas is to crowd as many car spaces as possible into the allotted space by reducing standards, such as narrower parking stalls and narrower aisles. The best design, however, should give full consideration to every design factor that improves access to and from the street; internal movement, maneuvering of cars, convenience of patrons and security of vehicles.

The average automobile is 18'-0" long and 6'-9" wide. Adding to these limits allowances for opening doors, the relative skill of drivers, the turning radius of the average automobile and a margin for safety, the following standards have been established. Parking areas built to these specifications will allow 80% of all cars to park with relative ease in one maneuver. Some reduction in these standards may be necessary at times -- but losses in efficiency will generally result.

In the larger lots greatest economy of space can be accomplished by placing the stalls at right angles to the aisles (see page 5). Acute-angle parking allows fewer stalls for a given length of curb or aisle than right-angle parking, but entrance is easier for drivers, and a definite advantage is that the aisle may be narrower and permits use of a lot too narrow for right-angle parking (see pages 6, 7, 8).

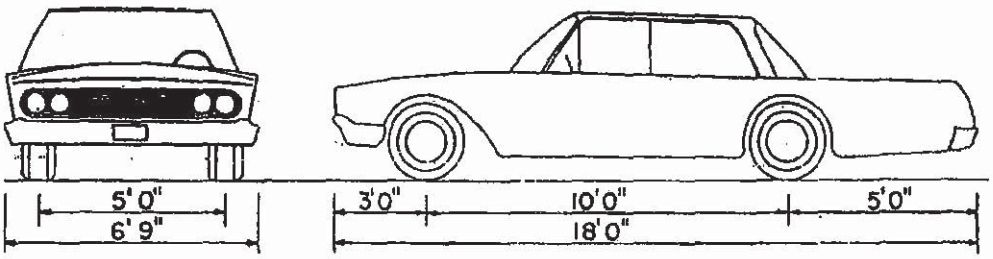
Acute-angle parking requires that the first stall be placed a minimum distance from the property line or sidewalk. This is a safety measure to protect occupants of the sidewalk from vehicles backing out of the stall.

Barrier curbs are essential when parking heads into an adjoining property line or sidewalk. Their placement depends upon the angle for which the parking is planned (see page 4).

Circulation of cars within facilities requires consideration of entrance and exit locations, width of aisles and the angle of parking. One-way, counterclockwise movement is desirable, where feasible, and will reduce congestion.

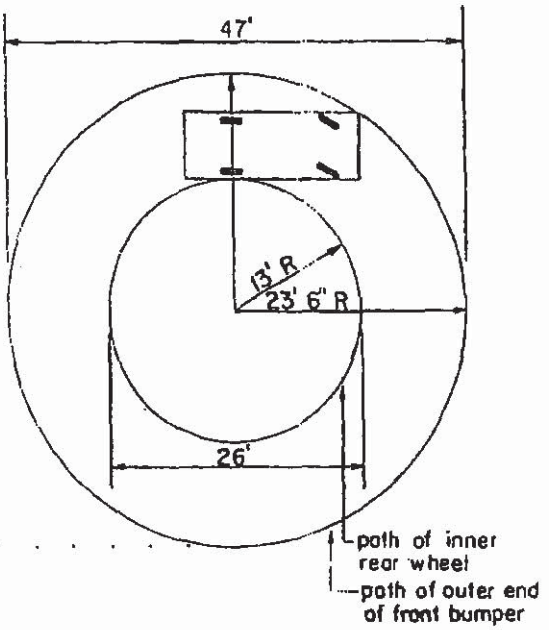
Entrances and exits should be held to a minimum to reduce conflict with street and sidewalk traffic, but it is highly desirable that exits and entrances be separated.

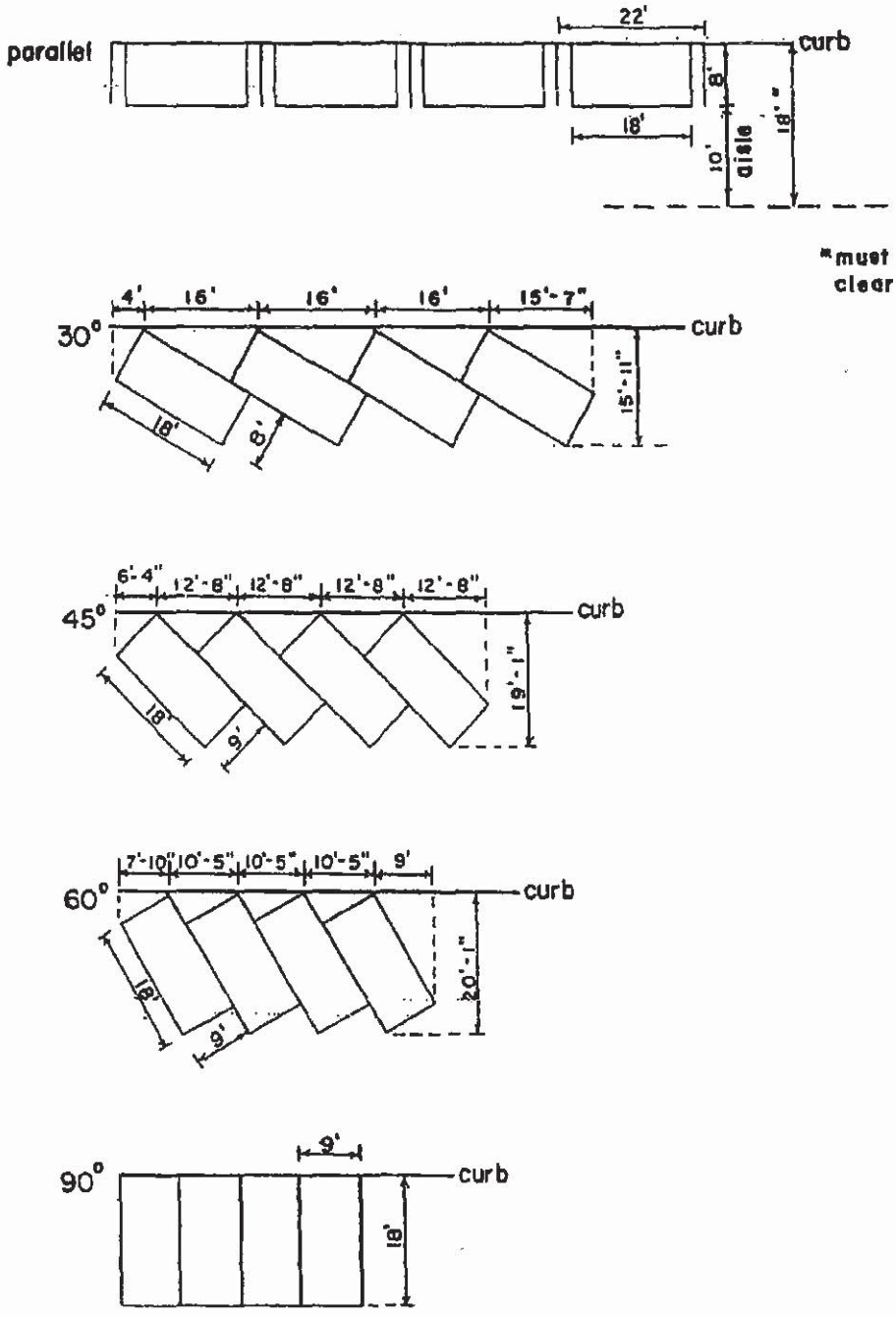
the average automobile is.....



18'0" long
6'9" wide

the
turning circle
for
the
average
automobile
is . . . . . .



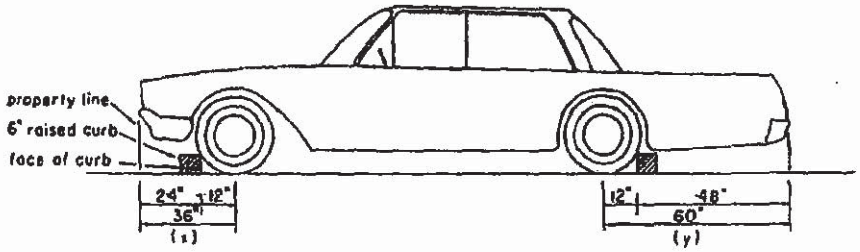


space requirements for parking at various angles

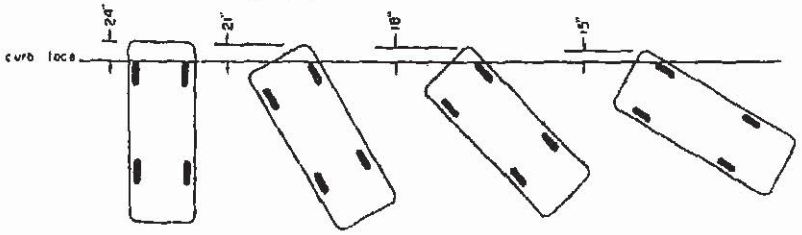
overhang of average automobile

parked against 6" raised curb at 30°, 45°, 60°, & 90°

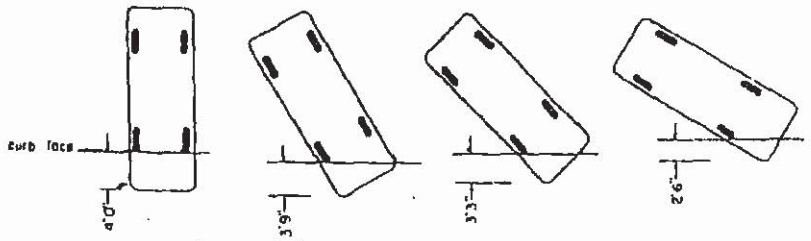
(raised curb may be either header curb or type "A" curb & gutter)



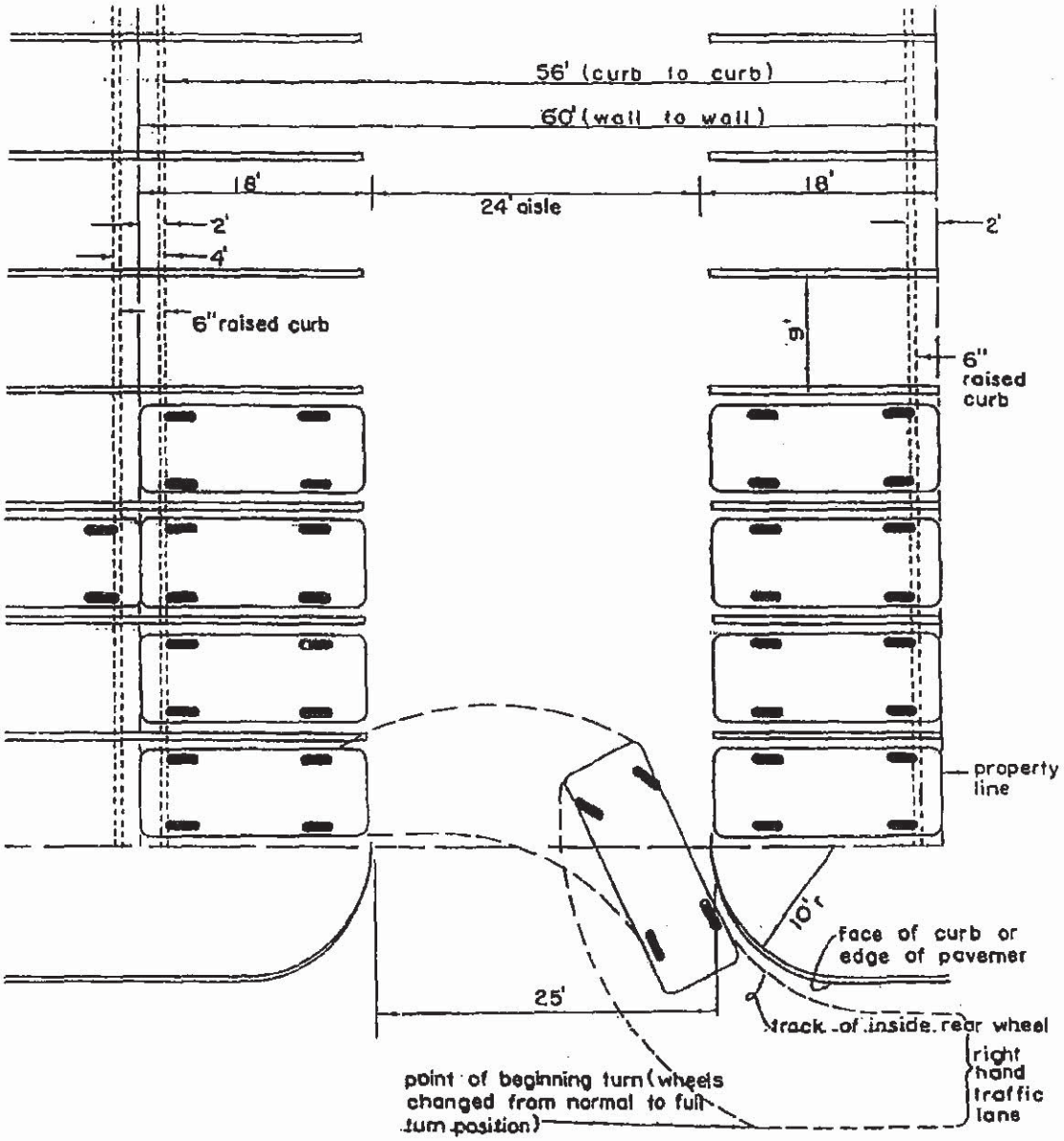
front overhang (x)



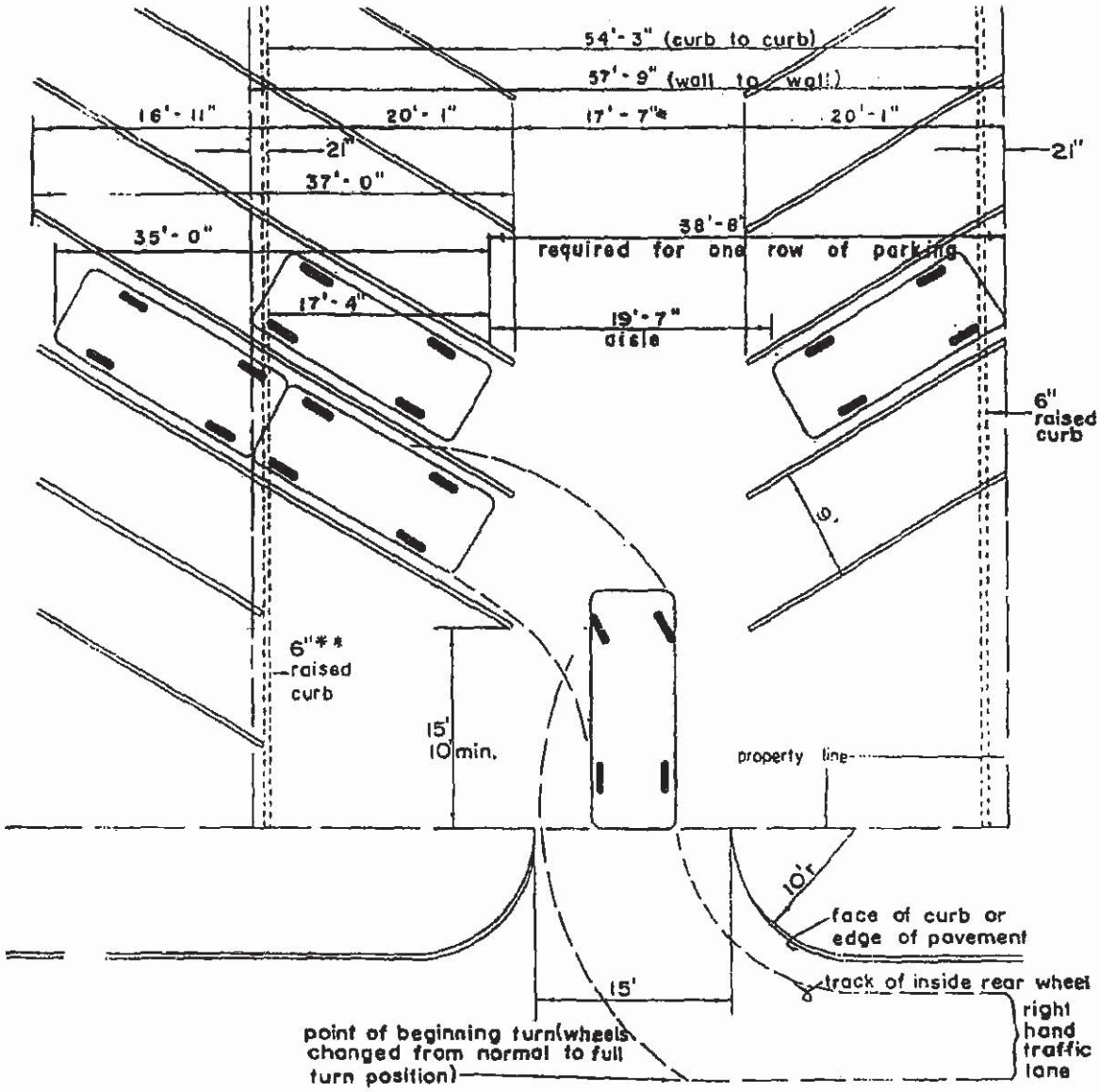
90° 60° 45° 30°



rear overhang (y)

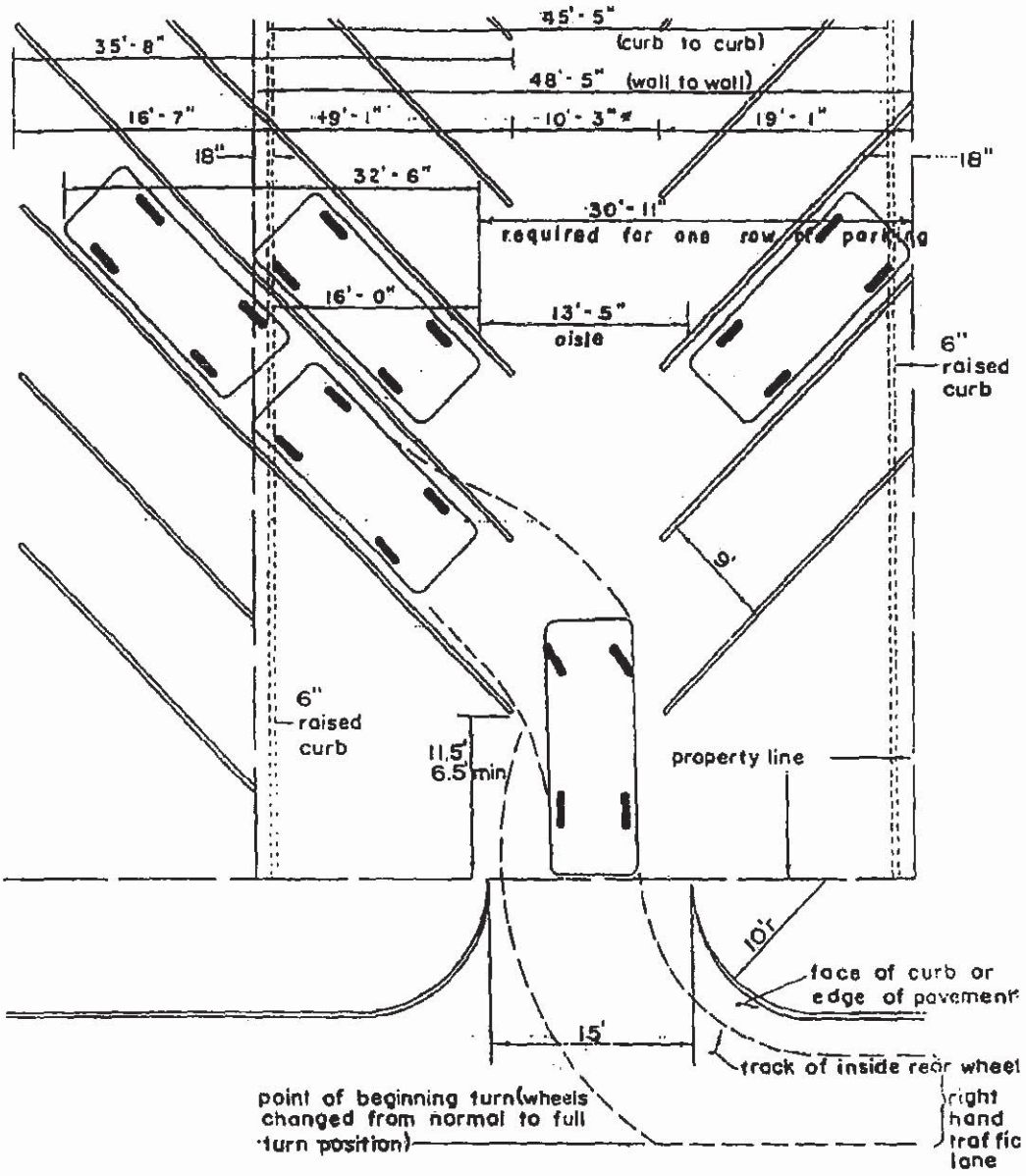

56' (curb to curb)
60' (wall to wall)
18'
24' aisle
18'
2'
4'
2'
6" raised curb
9'
6" raised curb
property line
10'
face of curb or edge of pavement
25'
track of inside rear wheel
right hand traffic lane
point of beginning turn (wheels changed from normal to full turn position)

90°



for 2 way traffic this dimension must be increased to 20'

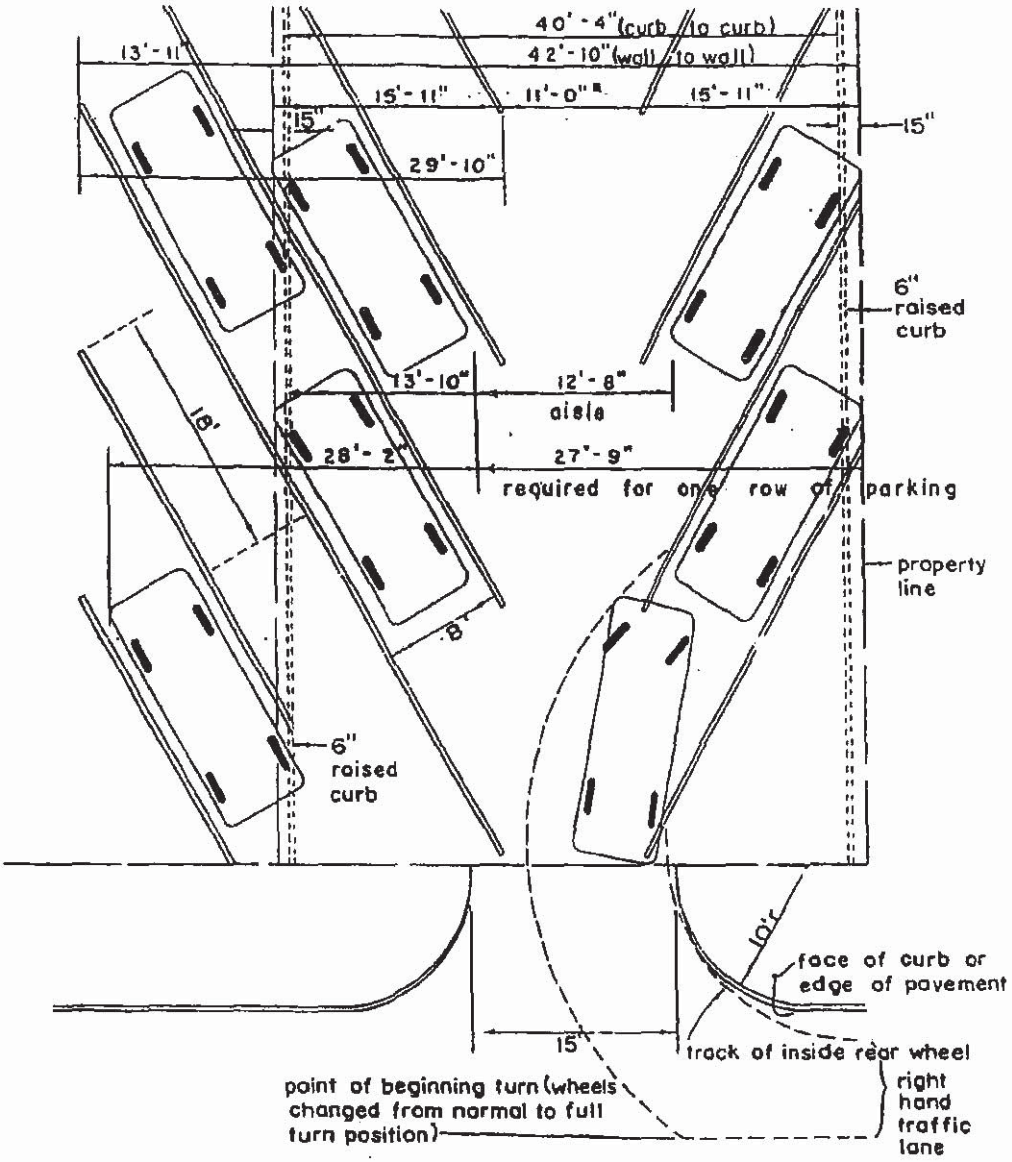
5" raised curb width must be increased to min. of 10" when it is a common barrier for two rows of parking



aisle width shown is minimum for 1 way traffic. for long rows of parking, width should be 5' wider to allow cars to pass.

*for 2 way traffic this dimension must be increased to 20'

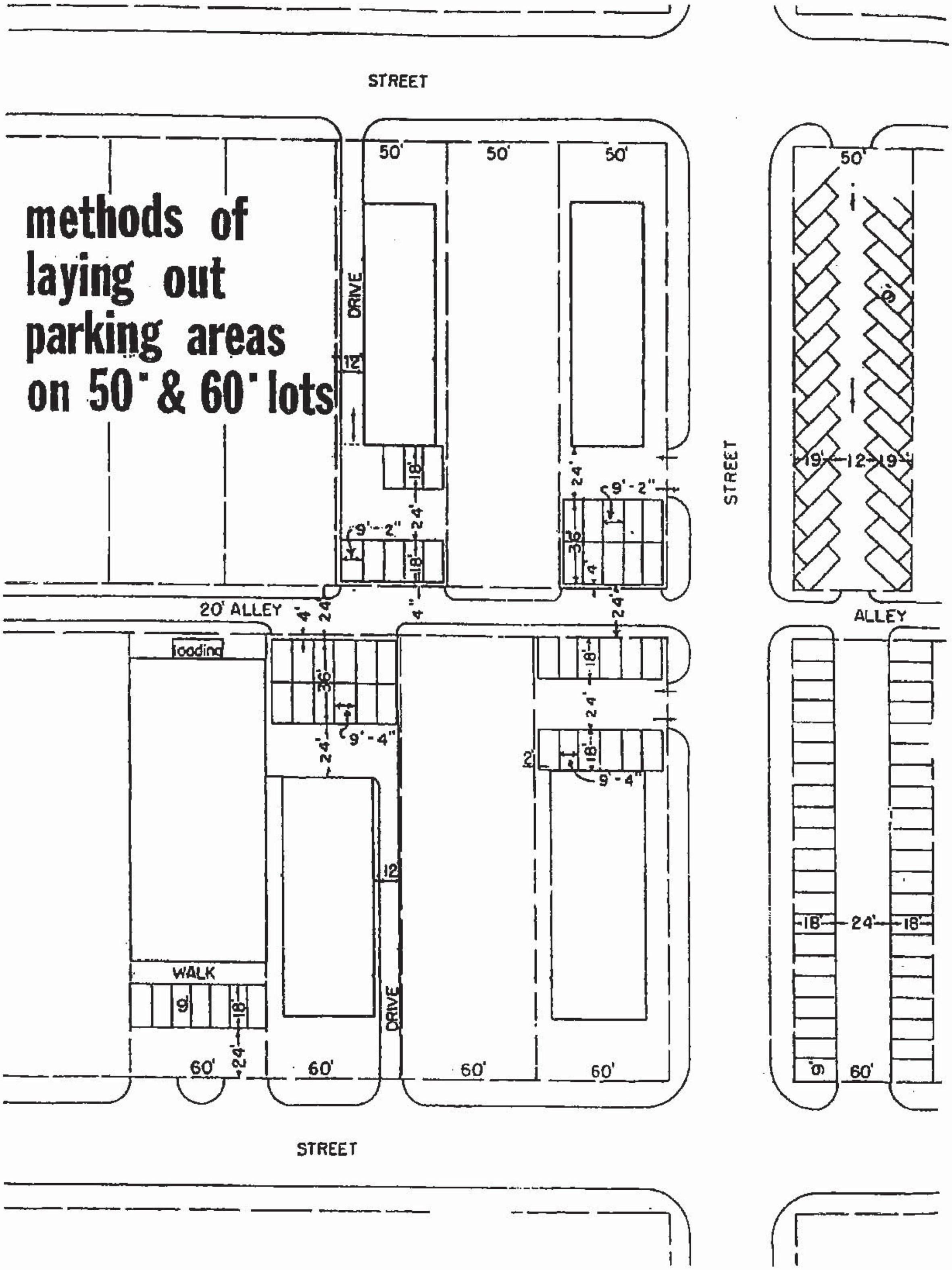
45°



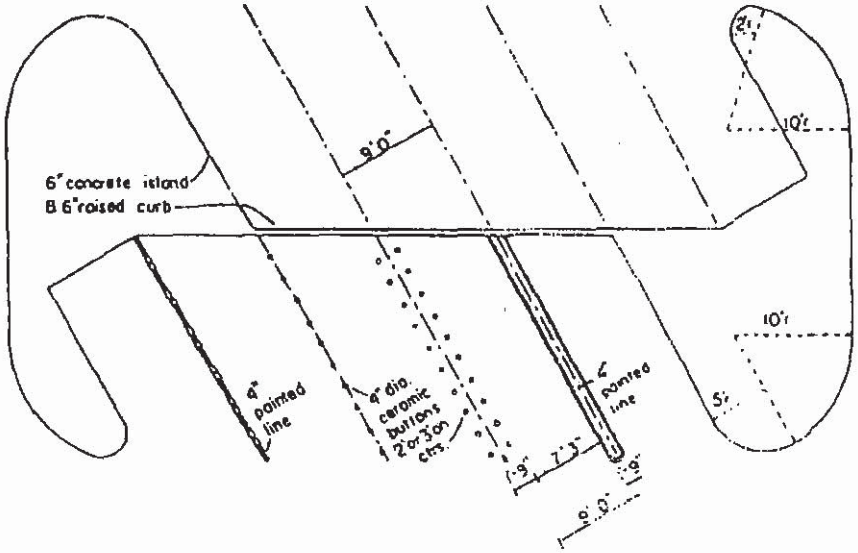
30°

* for 2 way traffic this dimension must be increased to 19'

methods of laying out parking areas on 50' & 60' lots

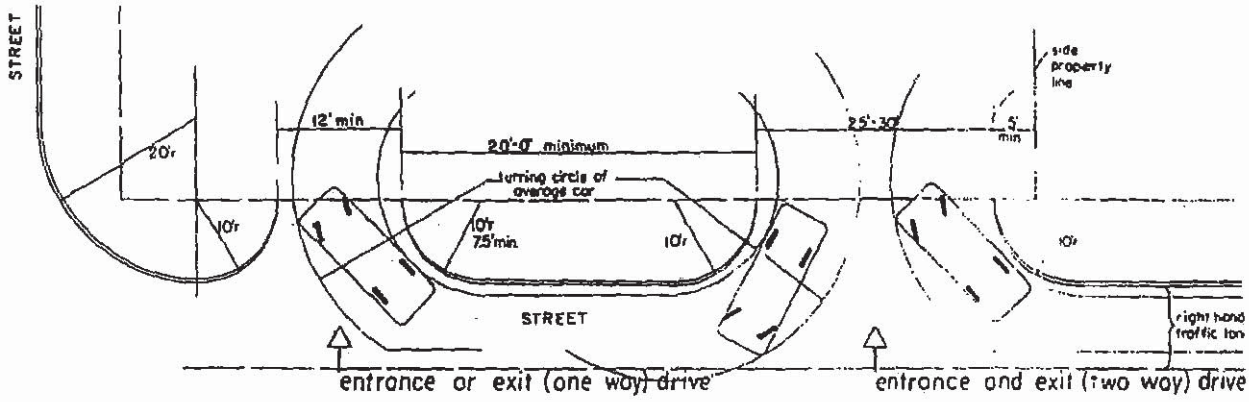


methods for marking parking stalls

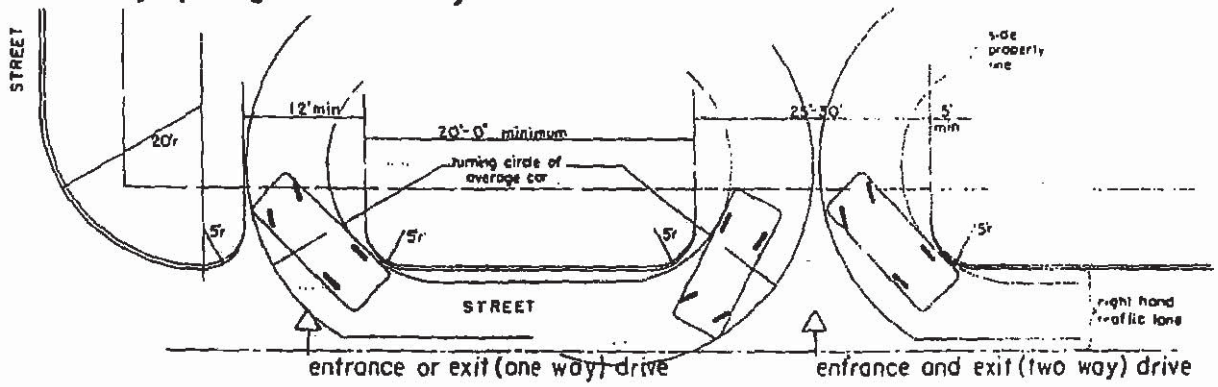


driveways

driveway openings on major thoroughfares



driveway openings on secondary streets



DRIVEWAY APPROACHES

COMMERCIAL DRIVEWAY APPROACHES. Walks, drives curbs, gutters, pavements and appurtenances on public property and other facilities to provide access to premises used for other than residential purposes shall be constructed provided or repaired in accordance with the following standards and requirements.

(a) WIDTH OF DRIVEWAY APPROACH. The width of any commercial driveway approach shall be not less than twelve (12) feet nor more than forty (40) feet measured along the property line, except driveway approaches for motor vehicle docks within a building shall not exceed sixty (60) feet in width at the property line. Where more dock space is required, the driveway approaches shall be separated by a traffic island meeting the standards set our in '(d)' below.

(b) MAXIMUM SPACE TO BE OCCUPIED BY DRIVEWAY APPROACHES. Driveway approaches shall not occupy more than seventy percent of the frontage abutting the roadway of the tract of ground devoted to one use which abuts the roadway.

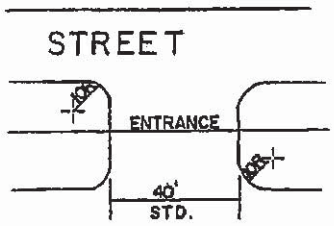
(c) NUMBER OF DRIVEWAY APPROACHES ALLOWED. Not more than two driveway approaches shall be permitted on any parcel of property with a frontage of 150 feet or less. Additional openings, for parcels of property having a frontage of 150 feet or less, may be permitted, after proof to the City Engineer of necessity and convenience to the public.

(d) SEPARATION BETWEEN DRIVEWAY APPROACHES. When more than one driveway approach is required to serve a parcel of property, a traffic island shall separate the driveway approaches. The width of the traffic island at the property line shall be a minimum of twenty (20) feet. Where the grade at the property line is the same as the sidewalk a six inch raised curb shall be constructed at the back of the traffic island along the property line and on private property. The raised curb shall be constructed so as to end twenty-four (24) inches from the intersection of the driveway approach with the property line.

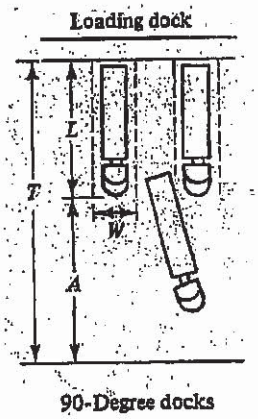
(e) PREMISES USED AS MOTOR VEHICLE SERVICE STATIONS OR PARKING LOTS. Premises used as a motor vehicle service stations or parking lots shall have a (6) inch raised curb or other approved traffic barrier along the entire street frontage except at the driveway approaches and access walks. The curb shall be placed so that automobile bumpers shall not extend over the sidewalk or public property.

TYPICAL TRUCK PARKING STALLS

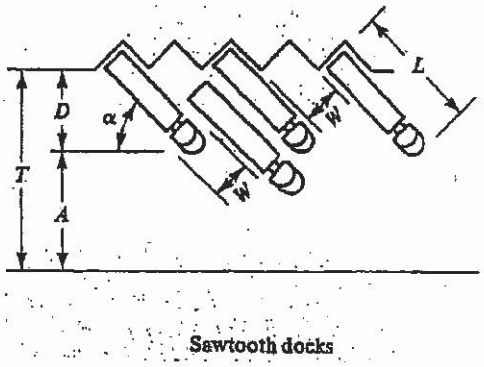
AN ORDINANCE AMENDING PARKING LOT LAYOUT SECTION, PAGE THIRTEEN (13), ORDINANCE #90-0-107 OF THE CITY OF LAREDO TO CHANGE...



Design vehicle	Length in feet (L)	Dock angle (α)	Clearance in feet (D)	Berth width in feet (W)	Apron space in feet (A)	Total offset in feet (T)
WB-40	50	90°	50	10	63	113
				12	56	106
				14	52	102
		60°	44	10	46	90
				12	40	84
				14	35	79
		45°	36	10	37	73
				12	32	68
				14	29	65
WB-50	55	90°	55	10	77	132
				12	72	127
				14	67	122
		60°	48	10	55	103
				12	51	99
				14	46	94
		45°	39	10	45	84
				12	40	79
				14	37	76



90-Degree docks



Sawtooth docks

STOVER, VERGIL G. AND FRANK K. KOEPKE,
TRANSPORTATION AND LAND DEVELOPMENT,
INSTITUTE OF TRANSPORTATION ENGINEERS,
PRENTICEN HALL, 1988, PP. 204-208

CONCRETE PAVEMENT

Contents Page No.

Typical Concrete Designs for Parking Areas

Type of Vehicle	Traffic	SOIL TYPE: Sand or Gravel	SOIL TYPE: Clay Sand or Clay Gravel	SOIL TYPE: Clay	Joint Spacing
Passenger Cars					
Pickup or Panel Trucks (Parking Areas)	Light	4"	5"	5 (D.S.)	12.5' (15' with D.S.)
	Medium	5	5	5 (D.S.)	12.5' (15' with D.S.)
	Heavy	6	6	6 (D.S.)	15' (20' with D.S.)
Trucks					
(Drives & Service Areas)	Light	5	5	5 (D.S.)	12.5' (15' with D.S.)
	Medium	5*	6	6 (D.S.)	15' (20' with D.S.)
	Heavy	7	7	8 (D.S.)	15' (20' with D.S.)

D.S. - Distributed Steel #3 deformed bars on 24" centers both ways (or equivalent) for light and medium
Distributed Steel #4 deformed bars on 24" centers both ways (or equivalent) for heavy

Light - Churches, schools, hospitals, office buildings, auditoriums and stadiums

Medium - Shopping centers, commercial areas (If defined truck service drives are provided, shopping centers and commercial parking areas may be considered as light traffic, dependent on individual conditions.)

Heavy - Industrial

*Use 12.5' (15' with D.S.) with 5" pavement.

DESIGN MIX OF CONCRETE FOR PARKING LOTS

Cement content: 6 sacks per cubic yard

Maximum slump: 4 inches

Maximum size aggregate: 1½ inch

Maximum water content: 7 gal. / sack

Entrained Air: 5% plus or minus 1%

Estimating the Materials

The table gives the number of cubic yards of concrete in slabs of different thicknesses and areas. Multiply the slab length by its width to get the area in square feet. Then read quantity of concrete from the table for desired thickness.

Example:

The slab is 20x30 ft. and 4 in. thick. Find quantity of concrete needed.

Area = 20 × 30 = 600 sq. ft.

Since the table does not go as high as 600 sq. ft., use the concrete quantity for 300 sq. ft. and multiply it by 2.

Quantity for 300 sq. ft. = 3.7 cu. yd.

2 × 3.7 = 7.4 cu. yd.

CUBIC YARDS OF CONCRETE IN SLABS

Area in square feet (length x width)	Thickness in inches: 4	5	6	7
50	0.62	0.77	0.93	1.1
100	1.2	1.5	1.9	2.2
200	2.5	3.1	3.7	4.3
300	3.7	4.6	5.6	6.5
400	5.0	6.2	7.4	8.6
500	6.2	7.7	9.3	10.8

Design Criteria

The plans and specifications in this folder were prepared by the Portland Cement Association for use in Texas.

The purpose of these plans and specifications is to provide a very simple method of constructing a concrete parking area. If curbs are not required, the words "integral curb" should be lined out or deleted.

These specifications are designed for use with ready-mixed concrete. Mix designs for the specified concrete are available from the ready mix producer. The producer will normally certify to the purchaser that he will furnish a concrete containing at least 6 sacks of cement and no more than 7 gallons of water per sack, and with a compressive strength of 3600 psi in 28 days. This certification eliminates the need for testing on small jobs. Care should be taken to insure that additional water is not added at the job site, causing the water-cement ratio to exceed 7 gallons per sack.

If test specimens are taken for small jobs, cylinders are generally used. Mix design data is usually available on compressive strength basis. The strength recommended in the accompanying specification has proven adequate in all parts of Texas.

The detail sheets give suggested joint layouts, although the contractor should be allowed to make minor changes in this jointing pattern if it will result in more economical construction and the changes do not exceed the maximum recommended. It is better to use too many joints than not enough. Care should be taken to insure that the one-inch minimum depth is obtained for each joint.

Most soils can be used as a sub-base for concrete with minimum preparation. It is important that the subgrade be thoroughly and uniformly wetted to a depth of about 6 inches prior to placing concrete on it. It is also important that the subgrade be of uniform density to provide uniform support for the slab. Concrete pavement can be engineered to perform satisfactorily on any soil condition. Best performance is obtained, however, where subgrade support is reasonably uniform.

Many contractors elect toplace about a two-inch layer of sand or its equivalent on the subgrade prior to placing. This is sometimes called fine grading. It allows a base over which to work and makes it easier to get a uniform thickness of concrete thereby reducing overrun.

Prior to setting forms, the subgrade should be checked for proper grade and alignment. Prior to placement of the concrete, forms should be checked for proper grade and alignment. The parking area should have a fall of at least 1/8 inch per foot in the direction of the desired drainage.

A complete and uniform coverage of curing compound can be obtained by applying the spray compound in one direction and then making a second application in a perpendicular direction.

The attached chart gives the recommended thickness for concrete parking areas. Use of these recommended thicknesses for concrete will result in pavements lasting as long as the building it serves (30, 40, 50 years or more).

Thickness Design Chart

SUBGRADE			PAVEMENT THICKNESS "t" IN INCHES					
	Strength		Parking Areas (1)			Drives & Service Areas (2)		
General Soil Type**	CBR	"k"	Light	Medium	Heavy	Light	Medium	Heavy
Poor								
Clays & Silty Clays	2 to 5	75 to 100	5 *(D.S.)	5 (D.S.)	6 (D.S.)	5 (D.S.)	6 (D.S.)	8 (D.S.)
Fair to Good								
Sandy Clays Sandy Silts Sand	5 to 10	150 to 200	5	5	6	5	6	7 (D.S.)
Excellent								
Gravel Sand Gravel Rock	10 & above	200 & above	4	5	6	5	5	7

- For Quality of Concrete see paragraph III of Design Criteria -

(1) Design for No. of Heavy Vehicles per Day (Light Panel Trucks and Autos Unlimited)	(2)	(2) If Truck Traffic Equals Drive Traffic, Use Drive & Service Area Thicknesses	Unlimited Axle Load Repetitions (lbs)		
			8,000	12,000	16,000

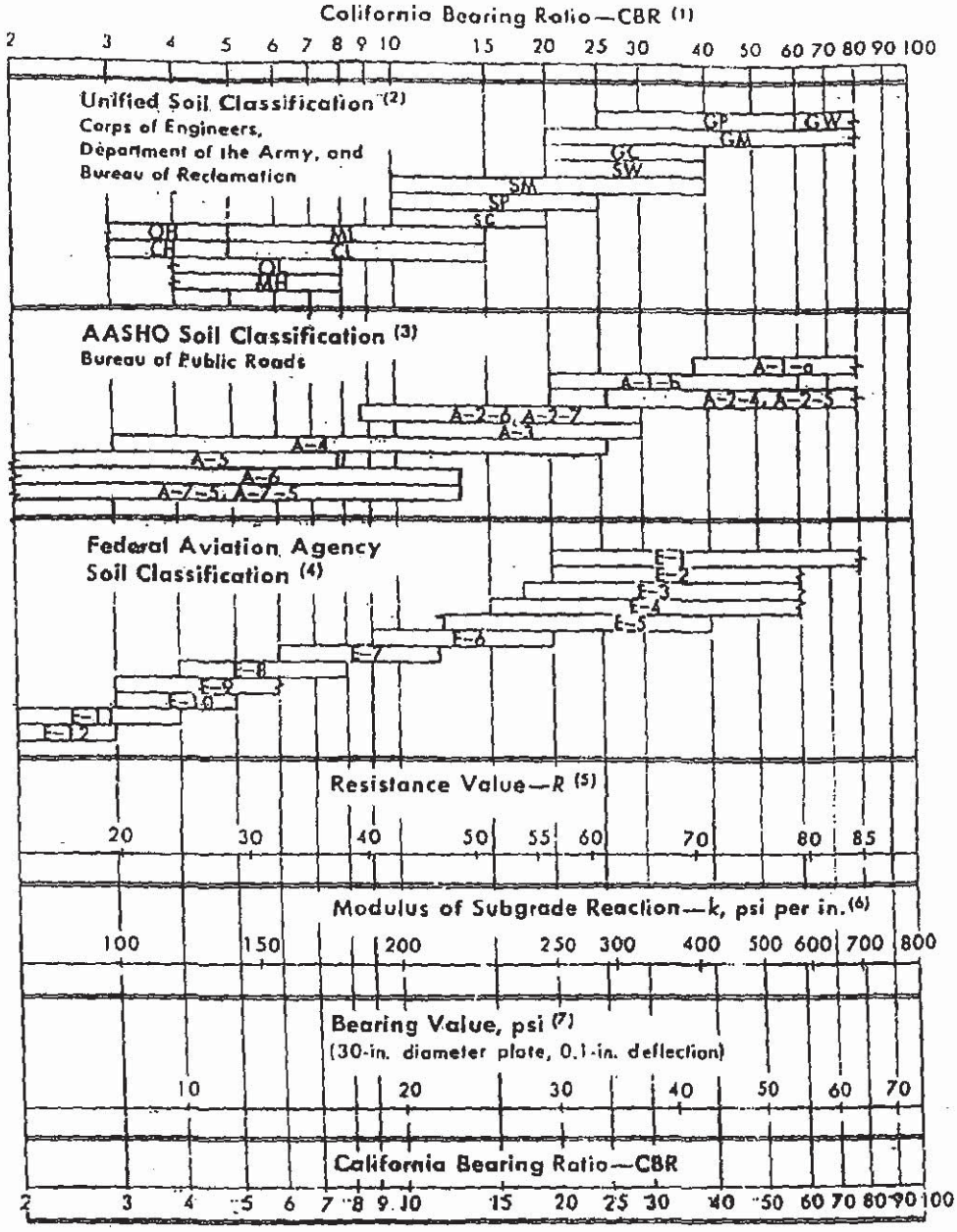
*D.S. - Distributed Steel #3 deformed bars on 24" centers both ways (or equivalent) for Light and Medium
Distributed Steel #4 deformed bars on 24" centers both ways (or equivalent) for Heavy

Light - Churches, schools, hospitals, office buildings, auditoriums, stadiums & apartment complexes.

Medium - Shopping centers, commercial areas (if defined truck service drives are provided, shopping centers and commercial parking areas may be considered as light traffic, dependent on individual conditions. See load repetition chart.)

Heavy - Industrial

** See page 5 "PCA Soil Primer" for interrelationships of Soils Classifications



(1) For the basic idea, see O. J. Porter, "Foundations for Flexible Pavements," Highway Research Board *Proceedings of the Twenty-second Annual Meeting*, 1942, Vol. 22, pages 100-136.

(2) "Characteristics of Soil Groups Pertaining to Roads and Airfields," Appendix B, *The Unified Soil Classification System*, U.S. Army Corps of Engineers, Technical Memorandum 3-357, 1953.

(3) "Classification of Highway Subgrade Materials," Highway Research Board *Proceedings of the Twenty-fifth Annual Meeting*, 1945, Vol. 25, pages 376-392.

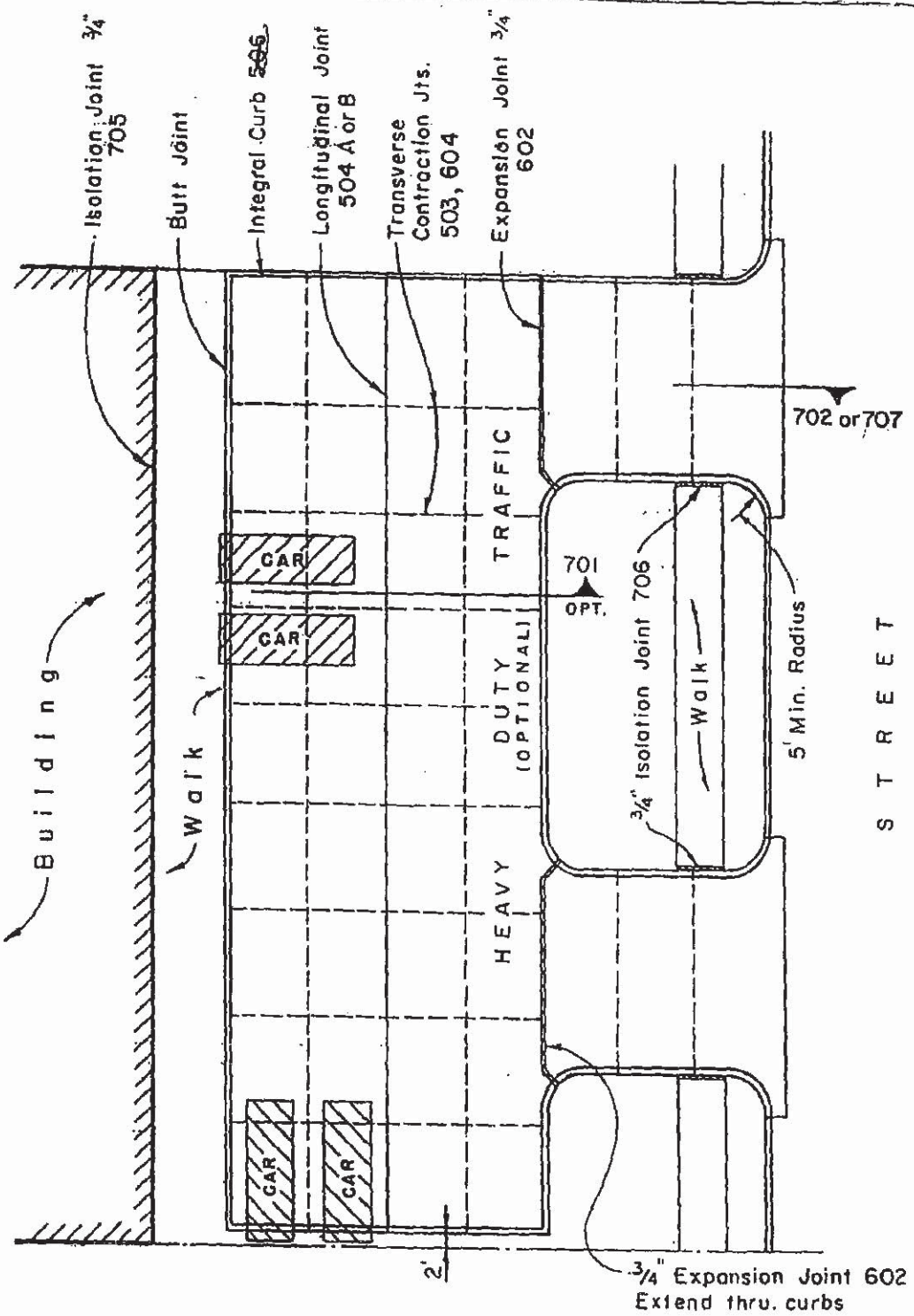
(4) *Airport Paving*, U.S. Department of Commerce, Federal Aviation Agency, May 1948, pages 11-16. Estimated using values given in FAA *Design Manual for Airport Pavements*.

(5) F. N. Hveem, "A New Approach for Pavement Design," *Engineering News-Record*, Vol. 141, No. 2, July 8, 1948, pages 134-139. *R* is factor used in California Stabilometer Method of Design.

(6) See T. A. Middlebrooks and G. E. Bertram, "Soil Tests for Design of Runway Pavements," Highway Research Board *Proceedings of the Twenty-second Annual Meeting*, 1942, Vol. 22, page 152. *k* is factor used in Westergaard's analysis for design of concrete pavement.

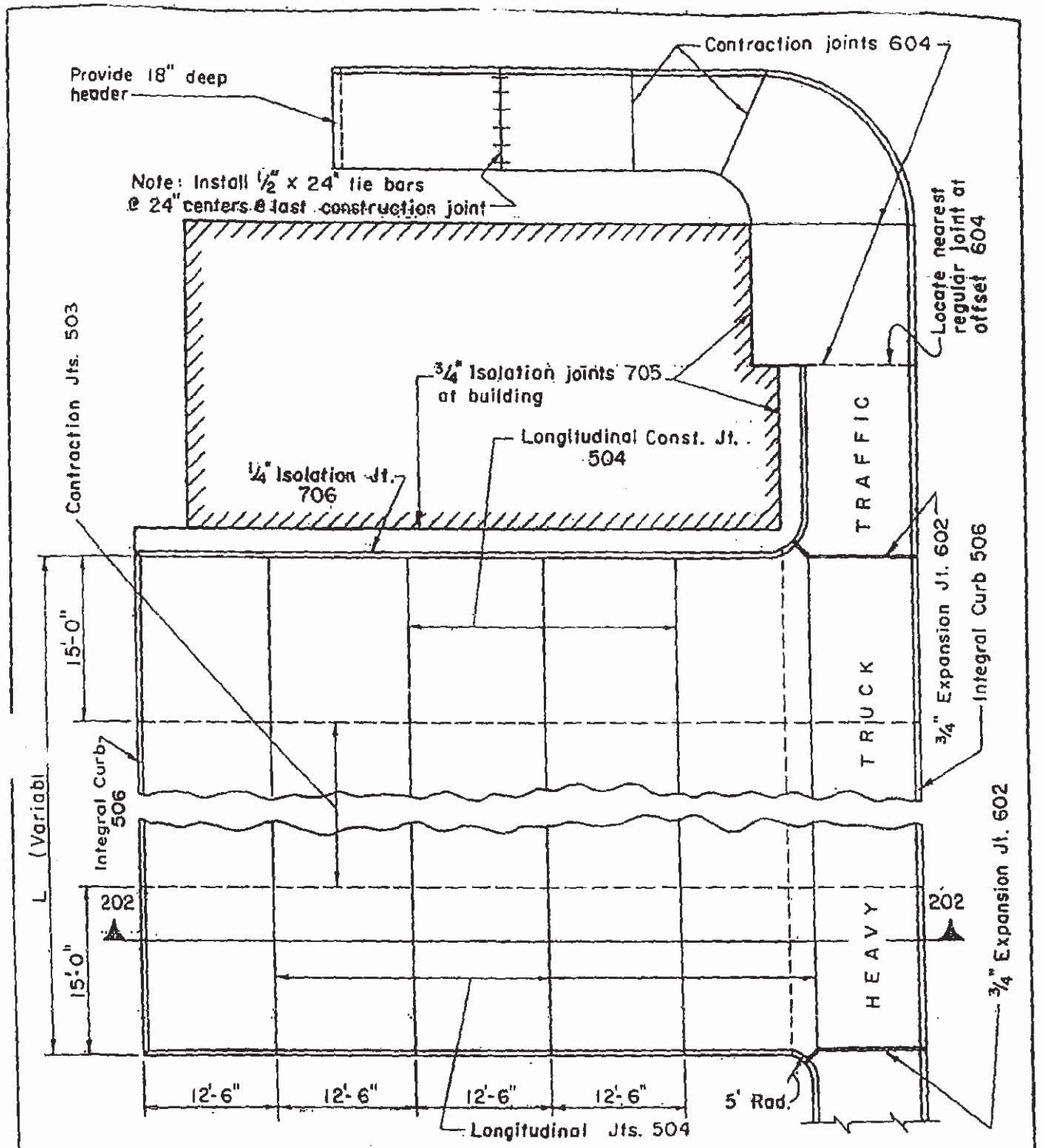
(7) See reference (6), page 184.

Approximate interrelationships of soil classifications and bearing values

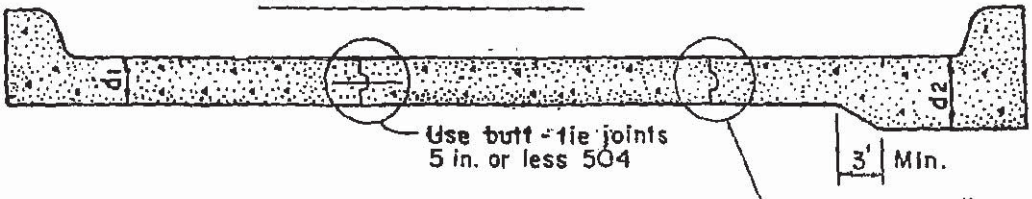


101 PLOT PLAN

TYPICAL LIGHT DUTY IN & OUT PARKING WITH HEAVY DUTY DRIVE

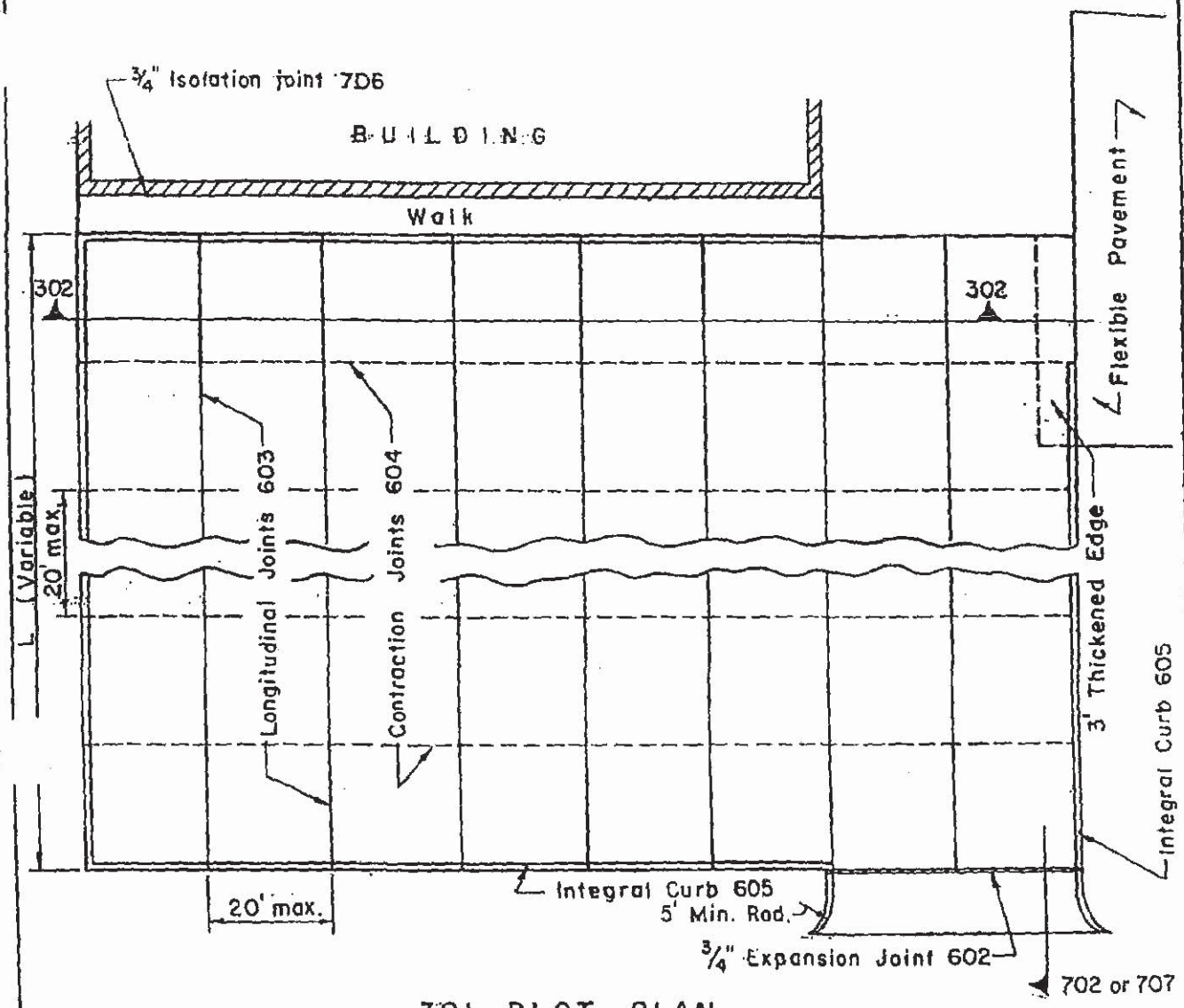


201 PLOT PLAN

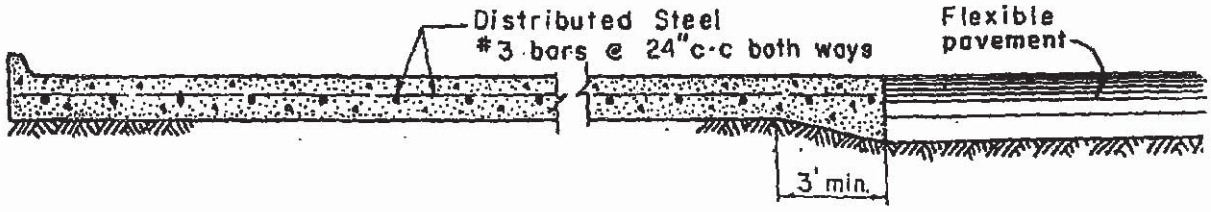


202 SECTION

TYPICAL PARKING LOT WITH HEAVY DUTY SERVICE DRIVE

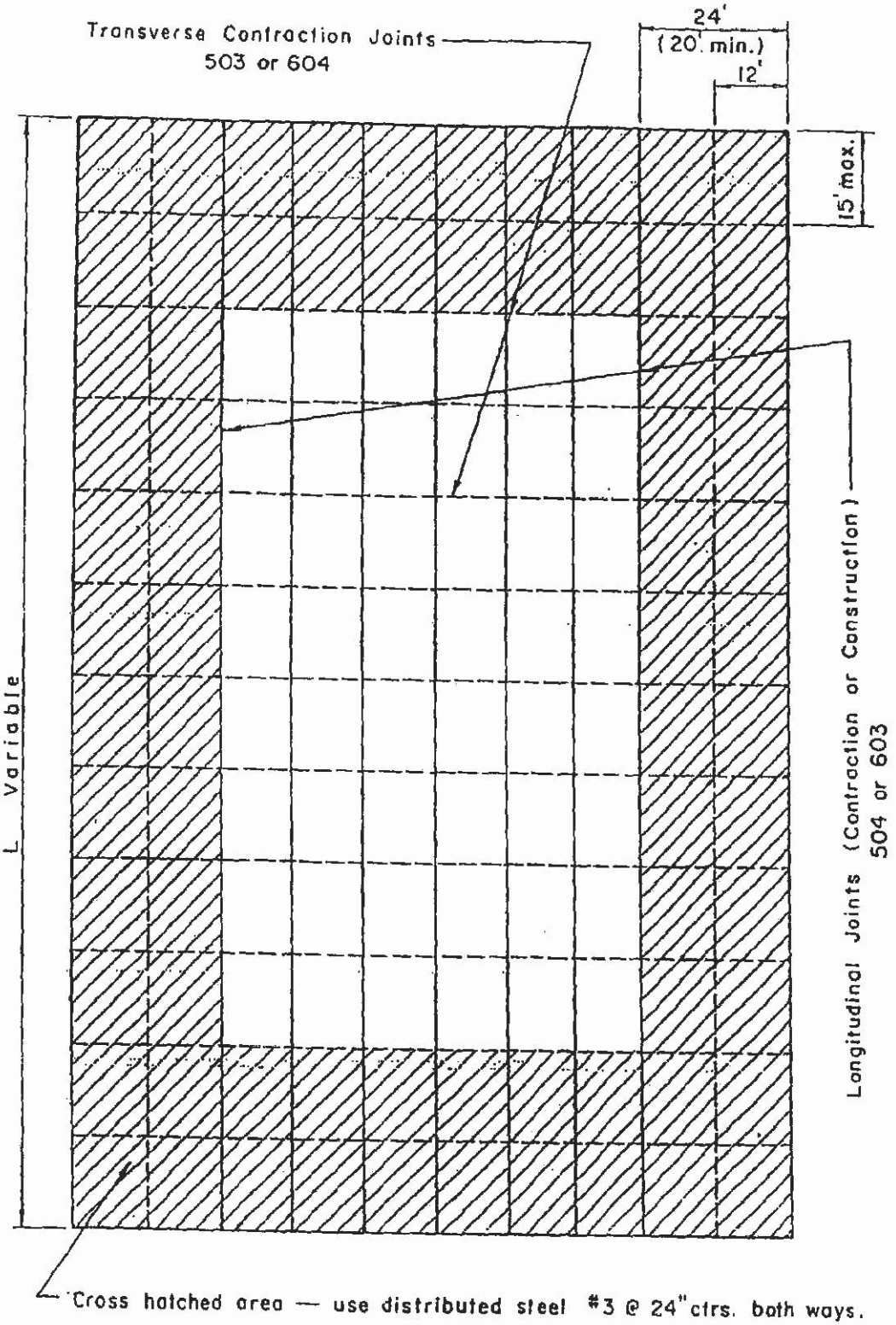


301 PLOT PLAN

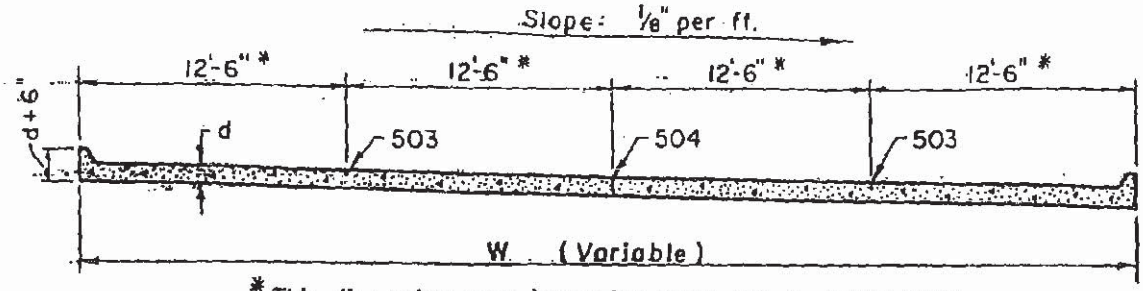


302 SECTION

TYPICAL HEAVY DUTY LAYOUT USING DISTRIBUTED STEEL

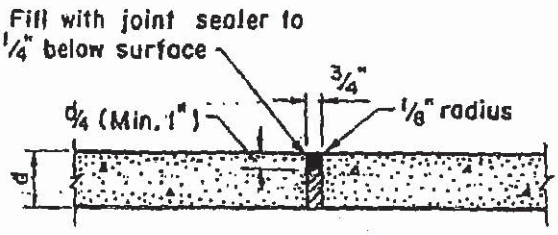


401 PLOT PLAN
Schematic only

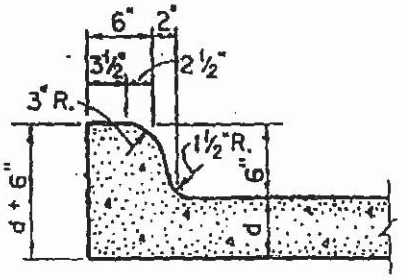


* This dimension may be varied somewhat to accomodate lot dimensions, but should not exceed 15 ft.

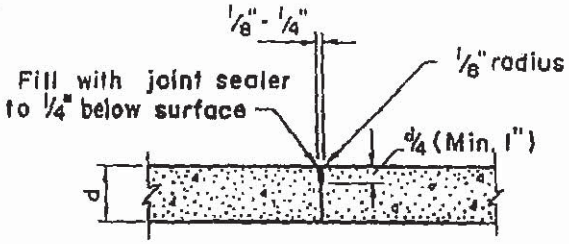
501 TYPICAL SECTION



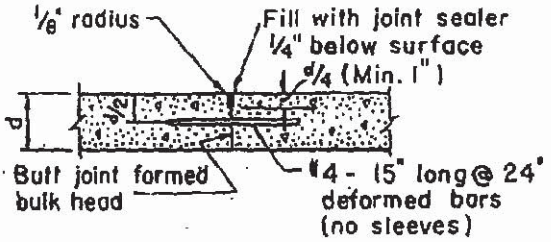
502 EXPANSION JOINT



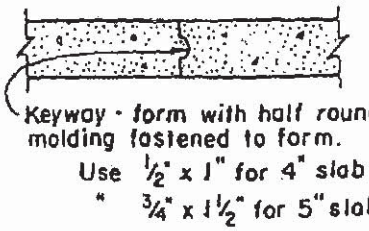
506 INTEGRAL CURB



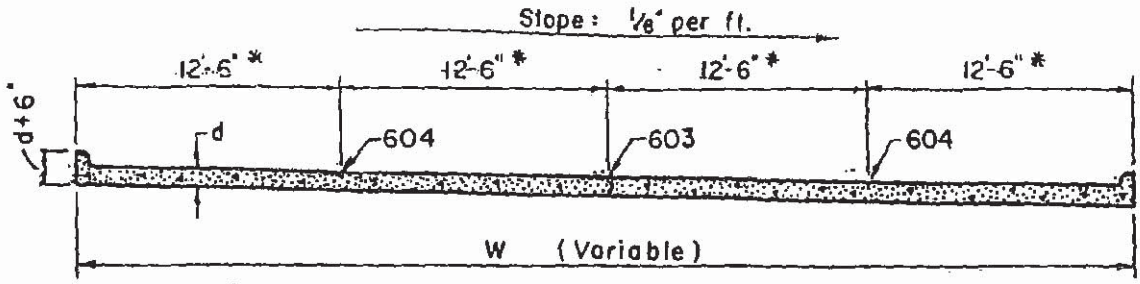
503 CONTRACTION JOINT
SAWED OR DUMMY GROOVE



504 A
BUTT CONSTRUCTION JOINT

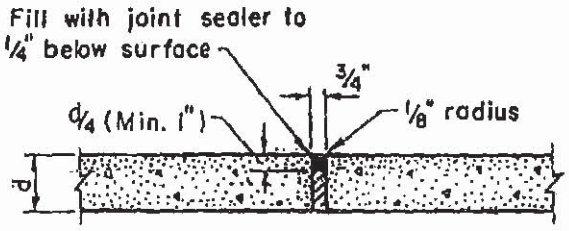


504 B
KEYED CONSTRUCTION JOINT

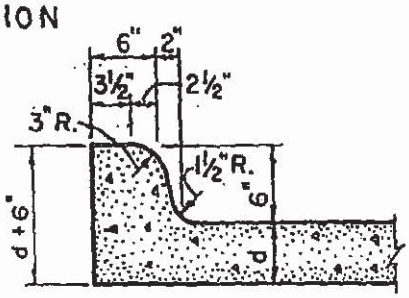


* Except joints 20' Max. may be used with distributed steel. Place steel in middle third of slab thickness.

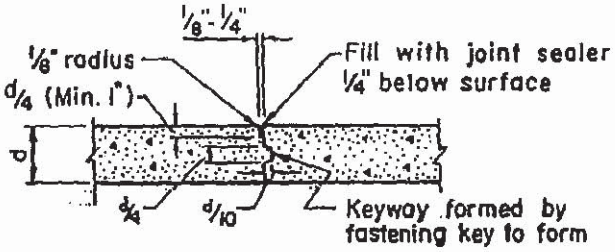
601 TYPICAL SECTION



602 EXPANSION JOINT

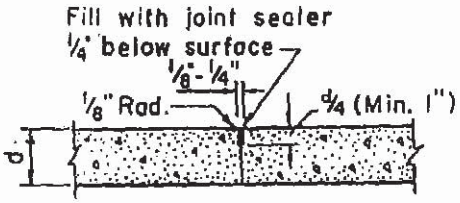


605 INTEGRAL CURB

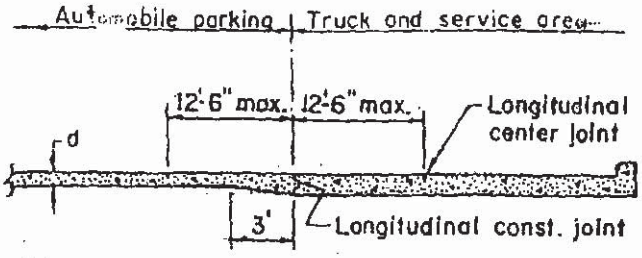


603
KEYED CONSTRUCTION JOINT
FOR 6" OR GREATER THICKNESS SLAB

Note: Key may be half round molding with approximately the same dimensions shown.

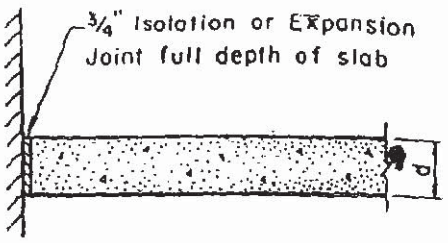


604 CONTRACTION JOINT
SAWED OR DUMMY GROOVE



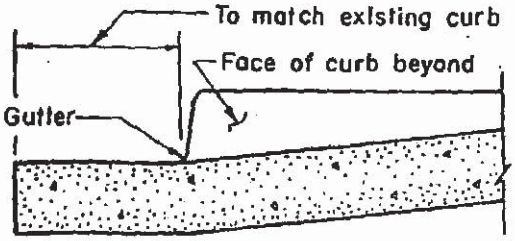
701 PARKING AND DRIVEWAY SECTION

d - See thickness chart



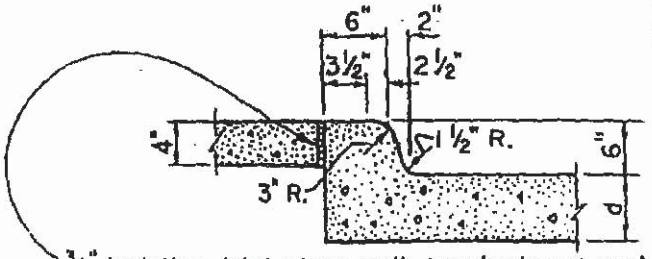
705 SLAB ABUTTING VERTICAL SURFACE

(Use only at buildings or other structures abbuting the paved area)



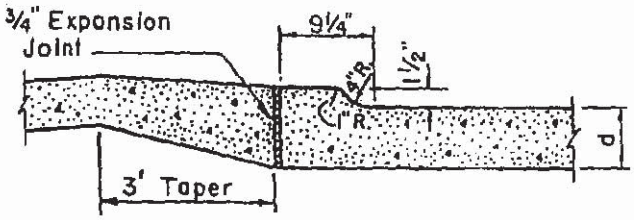
702 A INTEGRAL CURB DETAIL AT DRIVEWAYS

(For Curb & Gutter)

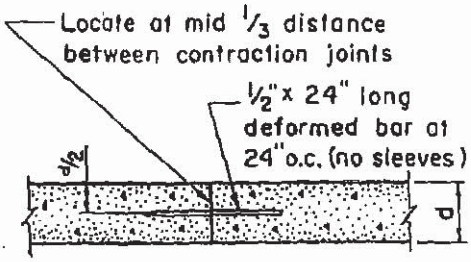


¾" Isolation joint where walk terminates at curb
No Isolation joint required where walk parallels curb.

706 INTEGRAL CURB ABUTTING WALK

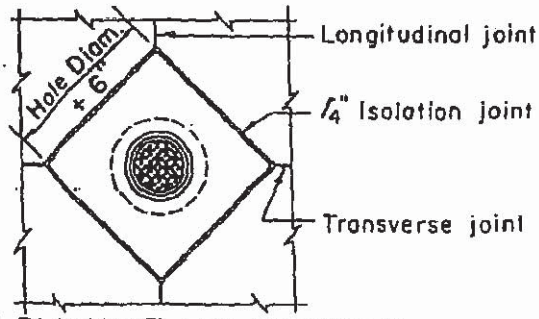


702 B INTEGRAL CURB DETAIL AT DRIVEWAYS

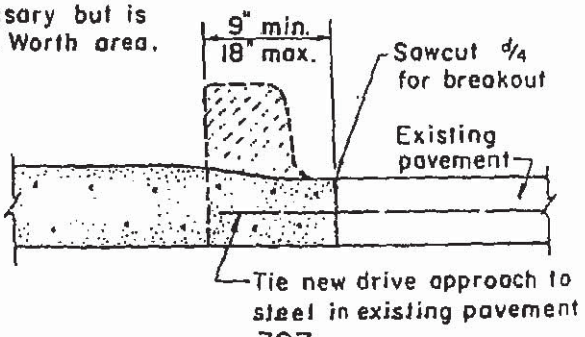


704 TRANSVERSE CONSTRUCTION JOINT

Note: Distributed steel is not always necessary but is common practice in the Dallas - Ft. Worth area.



703 BLOCKOUT FOR MANHOLE OR DRAIN



707 DRIVE APPROACH FOR STREET CONSTRUCTED WITH DISTRIBUTED STEEL

BITUMINOUS ASPHALT PAVEMENT

Contents Page No.

BITUMINOUS PRIME COAT

GENERAL

Description: This item shall consist of an application of asphaltic material on the completed base course in accordance with these specifications and as directed by the Engineer.

MATERIAL

Cut Back Asphalt: The bituminous material shall conform to the following:

GRADE MC-30	MIN	MAX
Kinematic Vis. at 140 F., CST	30	60
Flash Point T.O.C. F	100	

When distilled ASTM Method D-402, the distillate-off volume shall be as follows:

	MIN	MAX
Off at 437 F.%	--	25
Off at 500 F.%	40	70
Off at 600 F	75	93
Residue from 680 F. Distillation Volume %	50	--

The residue when poured from the flash without cooling immediately upon reaching the maximum temperature specified, shall have the following characteristics:

	MIN	MAX
Penetration at 77 F., 100 gms., 5 sec.	120	250
Ductility at 77 F., 5 cm/min. cms.	100	--
Solubility in CCI 4 %	99.5	--

The material shall be free from water.

MC-30 shall be applied uniformly at the rate of 0.25 gallons per square yard. At Contractor's option, appropriate emulsified asphalt, water mixture may be used in lieu of MC-30. Number of applications, mixture rate and depth of penetration shall be approved by Engineer prior to use of emulsified asphalt. Furnishing and placement of prime coat shall be subsidiary to pavement and flexible base construction.

CONSTRUCTION METHODS

Application of Asphalt: Asphalt shall not be applied when the air temperature is below 50 F and is falling, and it may be applied when the air temperature is 40 F., and is rising, the temperature being taken in the shade and away from artificial heat. No asphalt shall be placed when general weather conditions in the opinion of the Engineer are not suitable.

All storage tanks, piping, retorts, booster tanks and distributors used in storing or handling asphalt shall be kept clean and in good operating condition at all times, and they shall be operated in such a manner that there will be no contamination of the asphalt with foreign material. Asphalt shall not be heated above 400 F. at anytime and when applied, it shall be at a temperature of not less than 70 F., and not more than 150 F. The Engineer will select the temperature within 15 F. of the temperature selected. All asphalt heated above 400 F. will be rejected.

Before the application of asphalt, the surface of the base shall be cleaned of dirt. dust, or other deleterious matter by sweeping or other approved methods and if required by the Engineer, lightly sprinkled with water.

Asphalt shall be applied on the clean surface by an approved type of self-propelled pressure distributor so operated as to distribute the asphalt in the quantity specified evenly and smoothly under a pressure necessary for proper distribution. The Contractor shall provide all necessary facilities for determining the temperature of the asphalt in all the heating equipment and in the distributor for determining the rate at which it is applied and for insuring uniformity at the junction of two distributor loads. Asphalt shall be applied for the full width of the surface treatment in one application unless the width exceeds twenty-two (22) feet. No traffic or hauling will be permitted over the freshly applied asphalt.

BITUMINOUS TACK COAT

Description: This item shall consist of an application of asphaltic material on the completed and prime base course or existing pavement in accordance with these specifications.

MATERIAL

Cut Back Asphalt: The bituminous material shall conform to the following:

GRADE RC-2

	MIN	MAX
Viscosity (Furol) at 122 F., Sec.	200	--
Flash Point T.O.C. F.	80	--

The distillate, expressed as percent by volume of total distillate to 600 F., shall be as follows:

	MIN	MAX
Off at 500 F., %	50	75
Off at 600 F., %	70	90
Residue from 680 F, Distillation, Volume % ..	70	--

The residue, when poured from the flash without cooling, immediately upon reaching the maximum temperature specified, shall have the following characteristics:

	MIN	MAX
Penetration at 77 F., 100 g., 5 Sec.	110	150
Ductility at 77 F., 5 cm./min., cms.	100	--
Solubility in CCI , %	99.0	--
Spot Test	Neg	

- 4

The material shall be free from water.

RC-2 Cut back asphalt used for tack coat may upon written instructions from the Engineer, be further cut-back by the addition of not to exceed fifteen (15) percent by volume of an approved grade of gasoline.

CONSTRUCTION METHODS

Application of Asphalt: Asphalt shall not be applied when the air temperature is below 50 F and is falling, and it may be applied when the air temperature is above 40 F and is rising, the mperature being taken in the shade and away from artificial heat.

All storage tanks, piping, retorts, booster tanks and distributors used in storing or handling asphalt shall be kept clean and in good operating condition at all times, and they shall be operated in such a manner that there will be no contamination of the asphalt with foreign material. Asphalt shall not be heated above 500 F., at any-time and when applied, it shall be at a temperature of not less than 70 F., and not more than 150 F. All asphalt heated above 400 F. will be rejected.

Before the application of asphalt the surface of the base shall be cleaned of dirt, dust, or other deleterious matter by sweeping or other approved methods and lightly sprinkled with water.

Asphalt shall be applied on the clean surface by an approved type of self-propelled pressure distributor so operated as to distribute the asphalt in the quantity specified evenly and smoothly under a pressure necessary for proper distribution. Asphalt shall be applied for the full width of the surface treatment in one application unless the width exceeds twenty-two (22) feet. No traffic or hauling will be permitted over the freshly applied asphalt.

FLEXIBLE BASE COURSE

Flexible base shall consist of a foundation course for surfacing, pavement, or other base courses; shall be composed of caliche and stone materials, and shall be constructed as herein specified in conformity with the typical sections shown on the plans.

MATERIALS

The material shall consist of argillaceous limestone, calcareous or calcareous clay particles with or without stone, conglomerate, gravel, sand or other granular materials. The material shall be type F (pit run caliche), conforming to Item No. 248 of the State Department of Highways and Public Transportation Specification, 1982. The plasticity index of caliche shall have a maximum of 12 and a minimum of 5. Stones greater than 3" in any direction shall be removed during construction.

CONSTRUCTION METHODS

The flexible base material shall be placed on the approved subgrade in courses not to exceed the depth shown on plans. It shall be the responsibility of the Contractor that the required amount of material be delivered and uniformly spread and shaped. All material shall be moved from the place where it is dumped by cutting it windrows. After the material has been cut into windrows, it shall be sprinkled, spread and shaped, and rolled in proper sequence to prevent segregation and as necessary for required compaction.

The surface upon completion shall be smooth and in conformity with typical sections and to the established lines and grades. Any deviation in excess of 1/4 inch in cross section and in length of 16 feet measured longitudinally shall be corrected. All irregularities, depressions, or weak spots which develop shall be corrected.

Flexible base shall be compacted to an apparent dry density of not less than 90 percent (98%) of the maximum dry density as determined in accordance with Texas Department of Highways & Public Transportation 1982, Test Method Tex 113-E. Tests for density will be made within 24 hours after compaction operations are completed. If the material fails to meet the density specified, it shall be reworked as necessary to meet the density required. Just prior to the placing of any succeeding course of flexible base or surfacing on a previously competed course, the density and moisture of the top four (4) inches of flexible base shall be checked and if test show the density to be more than 2 percent (2%) below the specified minimum or the moisture content to be more than 3 percent (3%) above or below the optimum, the course shall be reworked as necessary to obtain the specified compaction and mositure content.

Should the base course due to any reason or cause lose the required density or finish before the surface is completed, it shall be re-compacted, refinished and retested at the sole expense of the contractor.

HOT MIX ASPHALTIC CONCRETE PAVEMENT

TYPE D

DESCRIPTION: This item shall consist of a base course, a leveling up course, a surface course or any combination of these courses as shown on the plans, each to be composed of a compacted mixture of mineral aggregate and asphaltic material. The mixture when designed and tested in accordance with these specificatons and methods outlined in THD Bulletin C-14, shall have the following:

DENSITY PERCENT			STABILITY PERCENT
MIN.	MAX.	OPTIMUM	
95	99	97	Not less than 35 nor more than 60 unless otherwise, shown on plans.

The pavement shall be constructed on the previously completed and approved subgrade, base, existing pavement, bituminous surface or in the case of a bridge, on the prepared floor slab, as herein specified and in accordance with the details shown on the plans.

MATERIALS: Materials used in Hot-Mix Asphaltic Concrete Pavement shall meet the requirements as set forth in Item 340 "Hot Mix Asphaltic Concrete Pavement" of the State Department of Highways and Public Transportation Specifications (1982).

Prior to laying any asphalt, contractor shall submit a Hot-Mix Asphaltic Concrete mix design for approval. He shall also submit written assurance that material stockpiles are sufficient to produce a mix consistent with the design for the duration of the project. If material source change occurs prior to completion, Contractor shall provide a revised mix design at no additional expense to the Owner.

The Contractor shall provide for quality control at the plant to ensure that paving material delivered to the site conforms to requirements of these specifications and the mix design.

CONSTRUCTION METHODS: Construction methods used in Hot-Mix Asphaltic Concrete Pavement shall meet the requirements as set forth in Item 340 "Hot-Mix Asphaltic Concrete Pavement" of the State Department of Highways and Public Transportation Specifications, 1982, with the following addition:

Application of Hot-Mix Asphaltic Concrete Pavement shall not begin unless the temperature is at least fifty (50) Fahrenheit in the shade and rising.

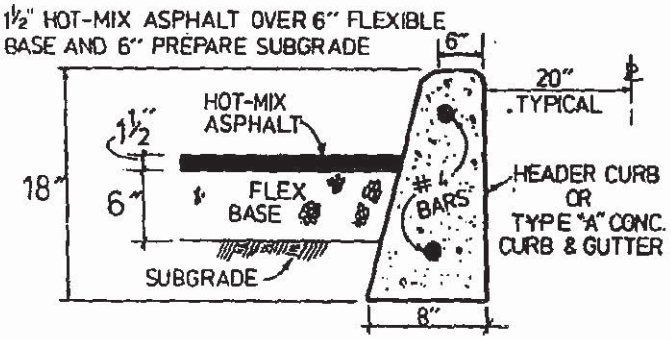
EQUIPMENT: Mixing plants that will not continuously produce a mixture meeting all of requirements of Item 340.04 in the State Department of Highways and Public Transportation Specifications, 1982, shall not be allowed.

DETAILS

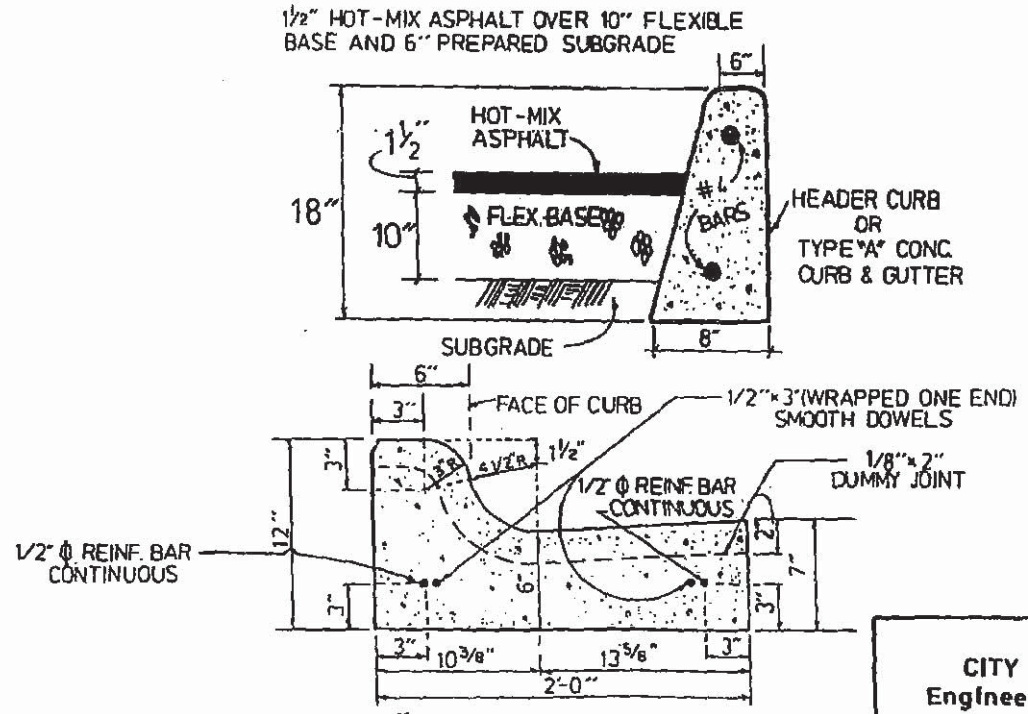
GENERAL NOTES:

HOT-MIX ASPHALT-ITEM 340 STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION (S.D.H.P.T.)
REINFORCING STEEL = A.S.T.M. - A-615 GRADE 60 OR 40. BARS REQUIRING BENDING SHALL BE GRADE 40.
CONCRETE - 3000 PSI CONCRETE
COMPACTION REQUIREMENT - SUBGRADE TO 95% MAXIMUM DENSITY IN ACCORDANCE WITH TEX 113-E (S.D.H.P.T.)
FLEXIBLE BASE TO 98% MAXIMUM DENSITY IN ACCORDANCE WITH TEX 113-E (S.D.H.P.T.)
SURFACE SLOPE - MINIMUM 1% SLOPE ON PAVEMENT

LIGHT TRAFFIC



MEDIUM TRAFFIC

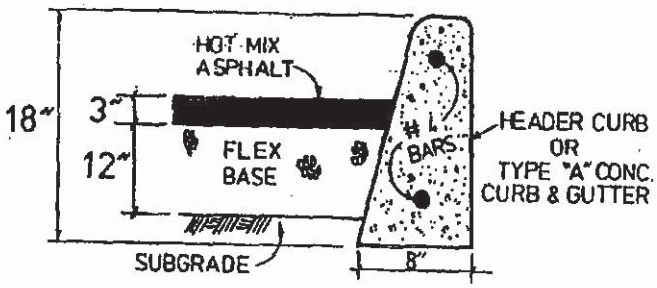


TYPE "A" CURB & GUTTER DETAIL

CITY OF LAREDO
Engineering Department

HEAVY TRAFFIC

3" HOT-MIX ASPHALT OVER 12" FLEXIBLE BASE AND 9" PREPARE SUBGRADE



CITY OF LAREDO
Engineering Department

PAVEMENT MARKINGS

PART I - GENERAL

1.1 DESCRIPTION

A. Work included: Provide pavement marking in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Specifications and Drawings

B. Product Data: Within 60 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
3. Photographs, scale drawings, or other data acceptable to the Engineer, showing types of graphics proposed to be used.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Specifications and Drawings.

PART 2 - PRODUCTS

2.1 PAVEMENT MARKING PAINT

A. Provide paint specifically formulated for use as pavement marking in vehicles/trucks traffic areas; and in the colors selected by the Engineer from standard colors of the approved manufacturer.

B. Acceptable Products (or equal):

1. "Traffic Paint" manufactured by J.E. Bauer Company.
2. "Traffic Paint" manufactured by Tnemec.
3. "Romark Traffic" manufactured by Glidden-Durkee.
4. "Traffic and Zone Marking Paint" manufactured by PPG.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 APPLICATION

A. Secure the Engineer's approval of graphics design and layout prior to start of application.

B. Using proper masking, stencils, and application equipment recommended for the purpose by the manufacturer of the approved paint, apply the approved paint in strict accordance with its manufacturer's recommendations.

3.3 PROTECTION

A. Provide traffic cones, barricades, and other devices needed to protect the paint until it is sufficiently dry to withstand traffic.

3.4 CLEANUP

A. When paint is thoroughly dry, visually inspect the entire application, and:

1. Touchup as required to provide clean, straight lines and surfaces throughout.
2. Using a permanently opaque paint identical in color to the surface on which the paint was applied, block out and eliminate all traces of splashed, tracked, and/or spilled pavement marking paint from the background surfaces.

3.5 HANDICAPPED

A. Label on curb parking spaces as indicatd on Drawings "Handicapped". Accessible parking spaces shall be identified and reserved for the Handicapped by a sign incorporating the symbol of accessibility and places so that it will not be obscured by parked vehicles. The signage shall be of such size that it is legible from a distance that would be reasonable for the condition.

LIGHTS FOR PARKING AREA

DESCRIPTION: This item shall govern for the materials and equipment used and for the installation of the various types of lights for the parking area as shown on the plans.

The term "Lights" as used herein shall constitute the complete assemblage of parts, equipment and miscellaneous items, including foundations, erected as provided in the plans and in accordance with these specifications, forming a complete and independent lighting unit.

MATERIALS: All materials furnished, assembled, fabricated or installed under this item shall be new, and in strict accordance with the details shown on the plans.

The contractor shall furnish six sets of shop drawings of the complete assembly in accordance with the Item, "Lights for Parking Area" with certification that all materials used in the fabrication are in accordance with the plans and specifications. No work shall be performed in the shop prior to approval of the above drawings by the Engineers. Any purchase of material prior to fabrication authorization shall be at the Contractor's risk.

CONSTRUCTION METHODS: Lights for parking area shall be fabricated and placed in accordance with the details and dimensions shown on the plans or as directed by the Engineer.

The careful erection and aligning of the poles furnished under this item shall be considered an essential feature of the installation of the assembly and shall be as near to true alignment as practicable.

All circuits shall test clear of faults, grounds and open circuits.

After satisfactory completion of the above tests and insulation resistance tests required, the illumination system shall be placed in operation. Final acceptance of the system will not be made until the system has operated satisfactorily for a period of 14 days (this includes energizing and de-energizing the lighting circuits at dusk and dawn). Final acceptance inspection of the system will be made at the end of a satisfactory 14-day test period.