tion of non-expansive soils for the subgrade.

(2) Controlling the differential swell or shrinkage of the subgrade soil.

(a) By insuring adequate moisture content and proper density at the time of concreting.

(b) By changing the characteristics of expansive soils to those of non-expansive soils.

(c) By preventing or controlling changes in moisture in the subgrade through the use of proper design, construction and maintenance practices.

Methods for Correcting High Joints

(1) Mudjacking, carried on with proper precautions, is an effective method of straightening warped slabs. It is the most economical method known.

(2) The introduction of water into the soil by artificial means has been partly successful in the correction of high joints.

DEPARTMENT OF TRAFFIC AND OPERATIONS

WILBUR S. SMITH, *Chairman*

A STATEMENT OF THE PARKING PROBLEM

BY NATHAN CHERNIACK, *Economist*
The Port of New York Authority

SYNOPSIS

In this paper the author defines the city "Parking Problem," reviews and appraises a number of proposed solutions and selects one that gives promise of being a highly effective universal solution.

He suggests that cities adopt an ordinance requiring that every new commercial building, regarded as a "traffic generator," provide adequate space for the parking of autos and loading and unloading of trucks Adequacy would be defined in the law by a schedule—one parking or truck loading space for so many square feet of interior building space, varying with different types of buildings This law would act at once as a stopper on the further aggravation of the problem from the construction of new commercial buildings.

If this ordinance is proved effective, he suggests a second, requiring *existing* buildings to make similar provisions within a 5 to 10-year period of grace This he believes would immediately induce ample provision for parking and truck loading space in business districts and at the same time, generate a wholesale rehabilitation of cities

What is commonly referred to as the "Parking Problem" is today a nation-wide city transportation affliction. No community has solved it completely Particularly in cities is it acute, and will become increasingly worse.

Many keen students have thought deeply on the subject A growing literature has been developed through research organizations. Numerous committees have made studies and have published their findings. The writer has had the benefit of all of these efforts in addition to his own experience in the analysis of the problem.

The opinions expressed in this paper are entirely those of the author.

This paper proposes: (1) to state the problem as clearly as possible; (2) to present and appraise proposed solutions; and, (3) to single out what appears to the writer to be a highly effective universal attack.

Definition of the Problem

In most metropolitan and city areas and their suburbs, substantial portions of the residents use their autos to travel to the central business district to work, to do business, and to visit places of amusement, recreation and culture More people have this urge than can be accommodated by parking spaces at curbs and in parking lots and garages within easy

walking distance of major destinations upon which the populace converges daily. Also, the cities' trucks and buses use substantial curb space.

The economics of the situation is such that there is a constantly increasing deficiency in the supply of terminal parking facilities at desirable locations, acceptable to the public in the face of an expanding public demand

This constitutes the *City Parking Problem.*

Curb Spaces—Supply and Demand

Curb spaces, particularly those nearest ultimate destinations, are the most convenient of available parking facilities. Yet in most cities these highly desirable choice parking spaces are free Naturally, the woefully inadequate supply of curb spaces can not meet the continually expanding and insatiable parking demand. Consequently, several methods are used to balance a decreasing supply against an increasing demand for curb parking spaces

Parking Restrictions at Curbs

The most widely used method of balancing supply and demand is to restrict curb space to short-time use This allows maximum turnover of curb space. However, available spaces are so few in relation to demand, the walk-to-and-from destination usually so long and the remaining legal parking time so short that overstaying past the legal time limit has become the rule rather than the exception Increasingly motorists make overstaying a habit. Bold motorists brave parking fines, as cheap forms of parking fees.

Double parking has often induced rigid enforcement of auto parking bans Then, in place of the parked autos, trucks flow in to occupy the liberated curb space Auto parkers are forced to side streets and to the few convenient parking lots and garages, which become monopolies. Their operators either raise their parking fees openly or through a "black market" somehow receive higher fees Public resentment against exorbitant parking fees usually follows, in response to which, enforcement is relaxed The cycle is completed.

In the face of a strong public demand for convenient curb space, the police are ever in the impossible position of trying to enforce unenforceable curb parking bans

Parking at Fringes of Business District

Another method often proposed to regulate supply and demand of curb space is to try to "educate" the motorist to park his car at the fringes of the business district (where land is cheaper and parking rates are correspondingly low) and have him use mass transportation into the heart of the business area One has only to try this method for himself, parking his car, emerging in a rain, perhaps, and then boarding a crowded bus or street car, lucky to find a strap to hang on. The difference between the auto ride and bus or subway ride is, to put it mildly, an anticlimax—more accurately, a terrific come-down This method of reducing auto parking demand in the central business district, obviously disregards human nature, if it banks on producing thereby a sizable dent in the city parking problem

Parking Meters at Curbs

Some 430 of our cities have bowed to the inevitable—have called into service the economic price system to help balance a limited supply of curb space against an excessive demand They have installed parking meters. These city authorities report some interesting discoveries about parking meters they simplify and reduce police enforcement, they are acceptable to both motorists and business men; and they produce surpluses significant enough to contribute to the cost of other improvements in city traffic facilities So long as such surpluses are used for further traffic improvements, the public will continue to accept meters. When such surpluses begin to be diverted to other city uses, the motoring public may resent it and rebel.

In any event, curb spaces alone can usually meet only a fraction of the parking demand at best. Parking meters may help keep parking demand and the limited curb space in some sort of balance, but only if ample and publicly acceptable offstreet parking space in the central business district can meet the continuously expanding overall parking needs.

Characteristics of Parking Demand

Students of parking are in general agreement on a few demand characteristics Motorists insist on convenient parking within an easy walking distance of their ultimate destination Most short-time parkers will

walk 500 ft. or less but will not walk more than 1500 ft. from parking point to ultimate destination. Most motorists will not wait more than 5 min. for cars to be delivered to them. Motorists are willing to pay a reasonable parking fee.

To meet these demand characteristics, offstreet parking terminals must be equitably diffused throughout the central business district, preferably in small units within easy access to and from arterial routes and each terminal must be convenient to ultimate destinations.

Economics of Parking Lots

In attempting to provide an adequate and publicly acceptable supply of offstreet parking lots in the central business district, the big stumbling block is the exceedingly high value of city real estate. Locations where masses of people desire to go, where motorists wish to park are the very places where land values are high. This will always be so, for people en masse make realty values.

Parking lot locations where land is not so expensive are usually too far away from major areas of ultimate destination. People bound for those destinations will, therefore, not use them. Only those within easy reach of destinations in the vinicity of these lots make use of them and then only to a limited extent.

Locations in the heart of the city being invariably on land of high values, cannot be operated profitably. A rate that will cover operating and all fixed charges will not attract enough parkers to fill the lot. Conversely, one that will fill the parking lot will not cover all charges For these reasons, parking lots are available only so long as owners are willing to accept part of normal interest on investment in the land. As soon as some other land use develops that will offer a greater financial return to the landowner, the lot goes out of circulation as a parking lot at the very time when its need becomes greater than before.

In growing cities parking vehicles is not a profitable land use. It is futile, therefore, to expect the parking lot enterprise ever to solve *completely* the city parking problem.

Economics of Parking Garages

Multi-story garages do offer a means, not only of adding to the aggregate offstreet parking space, but at the same time a method of spreading the high land values of lots among the upper stories. For example, a $30-per-square-foot lot to which has been added four stories of a $5-per-square-foot building has been converted to a $12.50-per-square-foot garage (i.e., $7.50 per square foot for the land and $5 for the building). This process of reducing unit footage costs, however, reaches its limitations rapidly above four or five stories. Every additional story becomes less economical for several reasons. The over-all unit gross footage cost increases with each story; gross footages required per car space also increase with height; it takes longer to unpark cars from upper stories; the margins of street capacities surrounding the garage are rapidly absorbed by the vehicles disgorged from the garage and thus further delay unparking and the get-away from the garage block. In short, as garage heights increase, operating costs rise; hence parking fees must rise. Reductions in unit footage costs are usually not sufficient to warrant going higher than four or five stories.

Low-cost garage buildings, or mechanical garages (where zoning laws permit such construction) may in specific instances meet a local demand with profit. As a general rule, however, storage garages are notorious as money losers, even under the most favorable circumstances. Those existing garages that do earn a profit for their present owners have, in most instances, some time or other gone through a financial wringer.

In the opinion of the author, there is, therefore, no hope that without some type of subsidy, private enterprise will ever furnish an entire central business a complete parking garage service, as such, on a self-liquidating and profitable basis.

Shall Cities Subsidize Offstreet Parking Terminals?

Those who have come to recognize these facts have suggested that cities subsidize offstreet parking space. There is justification for this suggestion. Cities do have a real interest in seeing that parking space is provided to those who wish to come to the city by auto to spend money for goods and services or to transact business. Land values in cities and the resulting realty taxes are predicated on sales and business transactions and on values added to manufacture within the city. Off-

street parking en masse would materially reduce traffic congestion. The real question is this: Shall the city subsidize the private parking lot and garage business?

It is common knowledge that in New York City, the Rockefeller Center Garage parking fees cover only a portion of the operating and fixed charges. Would anyone suggest that New York City subsidize Mr. Rockefeller? He, himself, would blush at the idea. City subsidies of private enterprise are dangerous. If parking is to be subsidized, why not mass transport?

Should Cities Operate Parking Terminals?

It is possible, through enabling state legislation, to endow the parking of vehicles in cities with public interest. Cities could, thus, acquire necessary properties by their right of eminent domain and then proceed to operate parking lots and to construct and operate parking garages as public business.

Under city department operation, however, (i.e, one that is revenue producing), the usual yardstick is service even at a deficit, rather than excess of revenues over expenses Revenues may be collected by the department but expenses usually come from appropriations. The city department must, therefore, operate within a straight jacket and can not offer that flexible and aggressive management necessary to operate successfully a large and comprehensive parking lot and garage business City department operation of parking lots and storage garages would not only produce losses in realty taxes on acquired properties but would earn operating deficits as well.

In the opinion of the author this is not a desirable solution of the parking problem

How About a Parking Authority?

In recent years, the "authority" form of management has demonstrated its ability to finance, construct, and operate successfully vehicular toll bridges, tunnels, expressways, and parkways Why not parking facilities?

Parking lots and garages *could* be operated successfully by a "parking authority." It should be pointed out, however, that choosing locations of lots and garages wisely, constructing and operating them economically, setting varying parking fees tailored to the public demand,—all require business acumen of the highest order. To withstand continued public charges of rate discrimination among different locations, without being forced into increasing deficits on operations, requires superb legal talent. To maintain the continued cooperation of city departments whose activities impinge upon the parking problems and whose prestige may be reduced by the activities of the parking authority are types of problems which require keen political astuteness. A parking authority, therefore, requires a board of commissioners of a high order with mature, broad business judgment reinforced with some political experience, assisted by a highly-paid, experienced staff.

The author does not wish to imply that there is any dearth of ingenuity, mature business experience or political astuteness in any city. Far from it. He does wish to leave these thoughts There is no magic in the word "authority." In order to borrow funds through the sale of bonds secured by revenues only, at rates substantially lower than that of private enterprise, the authority must first demonstrate successful self-liquidating operations Pending such demonstration, it must be given some financial cushion either by the city, state, or federal government upon which to borrow funds for the construction of a comprehensive system of parking facilities. The mere creation of an authority can not be complacently accepted as a guarantee of success in solving the parking problem.

Merchant Supported Parking Terminals

In growing cities, the commercial use of land for parking vehicles is usually an unprofitable business. On the other hand, the passengers in the vehicles that come to the city to transact business, contribute substantially to the profitableness of city business activities. Why not marry the unprofitable parking activities to the profitable business transactions of the vehicle passengers and, thus, produce a profitable venture? This is, of course, the theory behind merchant-supported parking terminals

Progressive merchants realize that they have a vital interest in the parking problem, that more adequate parking facilities will attract more shoppers to the city, more frequent visits, more sales. Hence, individuals as well as groups of merchants have provided parking spaces for their customers either by operating lots and garages themselves, or by validating

auto parking tickets on the basis of purchases. Some do not even require purchases to validate tickets, charging the cost to advertising rather than to sales.

This approach to the solution of the city-parking problem is all to the good It is in the right direction. But it solves only part of the whole problem So long as merchants *do not own* parking properties, this solution lacks permanency. As this method of meeting the parking demand becomes increasingly successful, parking lots will eventually be forced out of parking use, by the demand created for the properties for higher competitive land uses. Chiselers may cause some merchants to cancel voidable agreements. To pin hopes on this method as a *permanent* solution of the parking problem, the marriage of merchants' establishments to parking terminals must be more than a trial marriage. It must be an indissoluble union impossible of divorce. Only then will the shopper portion of the city parking problem be solved permanently.

To meet the objection of non permanency, the idea has been brought forward of a parking district authority with the right to tax property owners. State enabling legislation permits such authority to be formed, if say, the property owners of 60 per cent of the total assessed valuation of the real estate in the downtown area petition the city officials to create it. This is an *IFY* proposition. *IF* a large enough segment of business property owners volunteers to participate in a joint venture with a city and *IF* it permits itself to be taxed proportionately to cover probable deficits and parking benefits that differ widely as among property owners, the Parking District will solve the parking problem in the Central Business District.

A Promising Attack on the Parking Problem

This review of the attacks on the city transportation problem Number 1 is by no means exhaustive There are numerous variations. What it adds up to is this: the attacks that have been tried have serious limitations and vary widely in their effectiveness To use a military analogy—some attacks are like hand grenades, others like bombs or "duds," and still others like "block busters." What is needed is a weapon of atomic bomb proportions—to obliterate completely the parking problem. Such a weapon must depend on its power, not on gadgets, mechanical or legal, but on its ability to release a tremendous amount of energy to shatter the problem. This weapon is in the making, but at present is only in the laboratory stage Not much attention has been given to it. When its effectiveness has been duly appreciated and recognized, it will come into its own.

The philosophy behind this weapon is rather simple It is this: the parking problem is created, maintained, and intensified by traffic "generators" A traffic "generator" is any building that attracts large masses of people in autos and large quantities of goods in trucks Such buildings contain retail shops, department stores, theatres, auditoria, stadia, commercial or professional offices, restaurants, hotels, warehouses, light manufacturing plants and other businesses.

A Parking and Loading Space Ordinance Needed for New Buildings

If cities are ever to catch up with the parking problem, city fathers must fearlessly place the responsibility with property developers for making adequate provision for offstreet auto parking space and offstreet truck loading and unloading platform spaces in new buildings that are inherently traffic "generators." Predicated on their police power to protect the safety, health and general welfare of the community, every city of any size should place such an ordinance on its statute books at the earliest possible moment. Such a law would act as a stopper on any worsening of the parking problem in the future, resulting from that source.

Parking and loading spaces need not be provided free by property owners. Tenants of these buildings might be required to pay for such space in their rent and they might be permitted to validate parking tickets of their employees, customers, clients and visitors.

Parking and loading spaces might be on contiguous or adjacent property but such space would, in any event, be *available*, in new or altered buildings.

Placing such an ordinance on the books will require two-fisted and courageous officials. Vigorous opposition must be expected from property owners—the very parties who eventually will benefit most from the effects of the law

Not enough thought has been given by traffic engineers to what constitute adequate requirements for parking spaces by different types of traffic "generators." Hence, to make this law effective, further research in this direction should be undertaken, to provide reasonable yardsticks. Some yardsticks have already been developed by the "laboratories" giving attention to this weapon.

In 1940, for example, New York City passed a Revised Zoning Resolution requiring off-street loading space in buildings hereafter to be used for manufacturing, storage, or goods display, in department stores, hotels, and hospitals, at a rate of *one truck loading berth for each 25,000 sq ft of aggregate gross floor area* Existing buildings not now used for such purposes may not be so used in the future, unless this provision is complied with

The Regional Plan Association has proposed a more liberal sliding scale whereby each additional truck berth would take care of increasing gross floor areas, and office buildings and hotels would not require as many truck berths as the present law calls for (See Appendix 1)

The Board of County Commissioners for Montgomery County, Rockville, Md., (sitting as a District Council for that portion of the Maryland Washington Regional District within Montgomery County) passed an amendment to its Zoning Ordinances requiring that on and after July 5, 1945, no building permit be approved for commercial and industrial buildings that does not make provision for offstreet parking space. (See Appendix 2)

The City of Pasadena has such an ordinance under consideration. Its planning commission has recommended its adoption (See Appendix 3) Other cities are adopting this procedure.

Parking and Loading Space Ordinance for Existing Buildings

If the parking and loading space ordinance for *new* buildings is found to be successful, then cities should turn the ingenuity of their legal talent loose on the second problem—placing a second ordinance requiring owners of *existing property* to provide similarly reasonable auto parking and truck loading spaces, within a period of 5 to 10 years after the adoption of this ordinance.

Despite this 5-to-10 year period of grace, the effect of this ordinance would be electrifying. An incentive will have been created and definite responsibility automatically placed on the shoulders of the existing property owners. They could not "pass the buck." Smart property owners would immediately obtain options on choice parking locations. They would put engineers and architects to work at once to use their ingenuity in incorporating the new parking and truck loading space with existing properties, to yield maximum revenues from higher rentals on their joint use

Among the laggard property owners, some hardship cases might develop. In those instances, cities might give relief in several ways: (1) permit such parking spaces to be located within certain maximum distances from existing properties, (2) plan for property owners block or community parking spaces and truck loading platforms, (3) through enabling legislation, utilize their right of eminent domain to acquire properties and resell them to property owners so that they could meet requirements of the ordinance

Another mass addition to the supply of off-street parking space would, thus, be made The additional parking and loading spaces would accommodate an increasingly larger number of cars and trucks per space, thus permitting future expansion in city vehicular traffic

The city, itself, should then cease to be a major offender. It, too, should provide adequate offstreet parking and truck loading spaces for all of its civic buildings, existing as well as new.

Ordinances Would Induce City Rehabilitation

The two parking ordinances, if adopted in major cities and judicially sustained, would start in motion a wholesale rehabilitation of cities. As suburbs continued to expand, central business districts of the city would expand accordingly. The economic advantages inherent in central business districts would be preserved and enhanced. Cities would grow functionally, up and out.

The present threat to cities of decentralization of commercial activities would disappear. Adequate parking spaces in cities would prevent the further expansion of specialty shops and department stores in the suburbs, at the expense of those in the city.

Cities would assume their major functions of being the seats of industrial, commercial,

recreational, amusement and cultural activities for which they are best fitted As cities proper specialized more and more on those functions, as the suburbs became increasingly the peoples' homes, and as more and more people traveled back and forth daily from suburbs to the cities to work, shop and play, city realty values would once more begin to rise. Their skylines would take on distinctive forms, reflecting the functional designs of a motor age.

APPENDIX 1

OFF-STREET TRUCK LOADING AND UNLOADING BERTH REQUIREMENTS PROPOSED FOR NEW YORK CITY BY REGIONAL PLAN ASSOCIATION[1]

Every Building Designed to be Used for						Required no of berths	
	Manufacturing storage or goods display, dept store or hospital			Office purposes or hotel for transient purposes		Each increment	Total
	sq ft of gross floor area			*sq ft of gross floor area*			
1st	25,000	25,000	1st	100,000	100,000	0	0
next	15,000	40,000	next	50,000	150,000	1	1
next	60,000	100,000	next	250,000	400,000	1	2
next	60,000	160,000	next	260,000	660,000	1	3
next	80,000	240,000	next	310,000	970,000	1	4
next	80,000	320,000	next	330,000	1,300,000	1	5
next	80,000	400,000		330,000	1,630,000	1	6
next	90,000	490,000		330,000	1,960,000	1	7
			next	340,000	2,300,000	1	8
each adnl	90,000		each adnl	350,000		1	

[1] Traffic and Parking Study—Regional Plan Association, Inc Appendix B Page 138 Presentation modified by author.

APPENDIX 2

SCHEDULE OF OFF-STREET PARKING SPACE REQUIRED BY THE AMENDMENT TO THE ZONING ORDINANCE ENACTED BY THE BOARD OF COUNTY COMMISSIONERS OF MONTGOMERY COUNTY, MARYLAND AND KNOWN AS SECTION VII A—EFFECTIVE JULY 5, 1945

Types of Buildings	Basic Units	One parking space required for the number of basic units shown	
		Ground floor (number)	Upper floors (number)
Commercial Buildings devoted to			
retail trade	floor area—sq ft	300	500
offices	floor area—sq ft	400	750
Restaurant	floor area—sq ft	50	
Hotel	sleeping room area—sq ft	500	500
Theatres, Auditoria, stadia, Recreational Establishments	seats—number	6	6

APPENDIX 3

SCHEDULE OF OFF-STREET PARKING SPACE SUGGESTED BY THE CITY OF PASADENA CITY PLANNING COMMISSION TO BE INCORPORATED IN A PROPOSED ZONING ORDINANCE

Type of Building	Basic Unit	One parking space for the number of basic units shown No. of Basic Units		
Commercial Buildings devoted to				
retail or Mercantile Business	gross floor area—sq ft	400		
offices		400		
Auditoria				
school	seats—number	12		
commercial	seats—number	5–8[a]		
churches	seats—number	8–10[a]		
theatres	seats—number	8–10[a]		
Dwellings				
single family	dwelling unit no	1[b]		
multiple family	dwelling unit no	1[b]		
Hotels		1st 20	20–40	over 40
Residential	dwelling unit no	20	4	6
Commercial	dwelling unit no			
Zone M uses	gross floor area—sq ft	40 000[c]		

[a] Subject to further research.
[b] No storage area shall contain space for more than 4 vehicles—one off street loading space for each
[c] In excess of 10,000 sq ft

DISCUSSION

DR. JACOB FELD. The solution of the congestion of parking in New York City streets includes a number of special problems. One of them occurs in heavy industrial and commercial areas and the other in congested residential areas.

In addition to the regulation of the police department, certain special regulations which are in existence in many cities can be used to eliminate a large part of the truck parking in city streets. One such regulation which is in force in New York City comes from the Highway Department under the Code of Ordinances of the City of New York, the construction of a "carriage-way" across sidewalks is controlled by the requirement that special permits must be obtained to lower legal curbs or to change the legal grade of sidewalks. In every case the actual or intended use for such carriage-ways must not endanger pedestrians. Actually this now results in the requirement that no permit can be obtained for lowering the curb unless the driveway extends into the building or open area within the building lines for the complete parking of the truck off the sidewalk. Since the backing of trucks against the building is therefore eliminated and the handling of materials across the width of the sidewalk is not economical, all new construction work and a great number of existing buildings are being provided with loading and storage space for trucks within the building.

Another regulation comes from the Health Department which controls under the Sanitary Code the rules and regulations for food handling The Code of Ordinances provide that no food intended for human consumption shall be kept, sold, offered for sale, displayed or transported unless protected from dust, dirt, flies and other contamination. It requires very little extension of normal procedure to see that this type of regulation results in all truck loading and unloading of food being required under roof covers and therefore takes the trucks off the street

The recently enacted zoning regulation for the City of New York restricting to a greater degree than previous regulations, the area of land which may be occupied by commercial buildings, offers a bonus to those owners who provide space within the building for parking of vehicles and loading of trucks. Such space can be provided either in the basement or on any of the floors within the structure or on the roof. The actual area provided for such facilities can then be added to the normal legal coverage of the land It is very simple therefore to occupy a full lot for a mercantile or store use, except for the necessary entrance ramp for garage or loading use in the basement or an upper floor.

Up to fairly recently, the New York City regulations did not permit garage storage within residential buildings. The resulting congestion of automobiles parked in areas chiefly occupied by apartment houses can easily be imagined. Even 20 years ago it was felt that this restriction must be modified—and a number of apartment houses were constructed with provision for the future use of portions of the cellars for garage storage. About 1932 the regulations were modified in the last building program of apartment houses and a great number of them provided space for automobile storage. It has been found that the type of people occupying apartments in the rental class of $20.00 to $30 00 per room per month are not all automobile owners. In the areas occupied by six-story apartment houses in Brooklyn and in parts of upper Manhattan, approximately 60 per cent of the tenants store their automobiles in the space provided. Garage use is only permitted to bona fide tenants of the building, although the law permits more than one automobile per family to be so stored. Provision in some of the six-story apartment houses of a full basement area for private automobile storage has proven to be more than necessary.

MR M. E. RIDGE, *Wichita, Kansas:* Like other cities, I think we probably have a comparable parking problem. We have plenty of parking, if it is properly used. At the present time it is being improperly used I was also interested in what Mr. Cherniack said because I have a hunch he has dealt with merchant groups. You can call the parking authority an 'ify' problem, and it certainly is when you deal with a group of merchants, as they are viewing each other and all suggested improvements with suspicion and alarm. It

is a big problem, and as I understand Mr. Cherniack's theory, if you conserve the parking you have at the present time, and use it advantageously, you can solve the parking problem in many communities without going beyond every realm of reality in getting a solution, in other words, saddling the public with unwarranted expenses by not first attempting progressive stages of relief.

MR T. H. OWENS, *Dallas, Texas:* Let us assume a company is going to erect an office building to have 20 floors and to house 2,000 workers In a paper yesterday it was stated that about 50 per cent of the people coming into the downtown area use automobilies. Assuming 1,000 of the people coming to work in that building would use automobiles what size of building, in comparison with this office building, would be needed to park those 1,000 cars?"

MR. CHERNIACK: Assume that the schedule of off-street parking space requirements shown in Appendix 2 were in effect According to that schedule one parking space would be provided for every 400 sq. ft. on the ground floor and one for every 750 sq. ft on the upper floors. Assume about 100 sq. ft of floor space per person. The 2000 persons would require 200,000 sq. ft. of floor space The ground floor 10,000 sq. ft. would require 25 parking spaces and the other 190,000 sq. ft of upper floor space would require 253 parking spaces. This building would be required to have about 273 parking spaces.

On the other hand, at an average of 1.75 persons per car, the 1000 persons driving to work would probably arrive in about 570 cars.

It will be up to each city to decide what a reasonable provision for the parking of autos should be and what the courts would hold to be reasonable.

MR. OWENS: According to official reports of O.D.T Dallas has the largest automobile registration per capita in the United States One of the larger department stores in our city has just acquired property sufficient to park about 800 cars about 7 blocks from the store and they have signed a contract with our Company to provide a 5 min bus service non-stop from their lot to this store, from nine in the morning until five in the afternoon. If that is successful, I think the other stores will go along, and we will solve the parking problems for the shoppers, at least for the time being.

MR BURTON W MARSH, *American Automobile Association:* Mr. Owens cited a case which brought to my mind a conversation I had with a vice-president of a very progressive, large department store in Washington This store operates a ramp type open deck parking facility adjacent to its store which is very successful. He told me their experience of providing ample parking lot facilities approximately 5 blocks from their store, and providing bus service between the parking facilities and store The Washington department store soon gave up this plan because its small use did not warrant continuance.

MR. J. F. HARBES, *State Highway Commission of Kansas:* We do not in Kansas have a problem such as in New York City, Cleveland and some of those cities, but it seems to me there is one point Mr. Cherniack has made that is particularly important. It deals with the expansion of present city business districts, thereby absorbing the so-called blighted areas, and as a result tending to solve, in a way at least, the parking problem I should like to suggest that a copy of this paper be presented to every City in the United States with 10,000 population or over. I believe it would be extremely helpful to city councils in their thinking about their parking problem It also may prove helpful to engineers in their efforts to obtain city approval of bold but meritorious problems leading to the present, as well as future, solution of the parking problem

MR. T J. SEBURN, *Department of Public Works, Kansas City, Mo.:* With our present street systems that are almost over-loaded with limited curb parking to feed them, if we increase the system of terminal facilities that will feed those immediate street systems, will it not be well to consider, along with the rezoning, some change in the general street pattern?

MR. CHERNIACK: I merely started your thinking on that subject If you had a law

and it were judicially sustained, you would then solve these problems locally, as they came up. As an example, one ingenius way such a problem was solved in New York City was at the World's Fair where a tremendous number of people drove in by car The World's Fair grounds were zoned against street vehicles. Only slow intramural franchise bus transportation was permitted That might have to be done in some cities that have very narrow crooked streets and tall buildings and where it is uneconomical to disturb them Some sort of zone would be set up in which no vehicles would be permitted. Everyone would be required to walk within those zones

In other cities it may be necessary to revamp the street systems into new patterns. There are many ways that would suggest themselves, once you have the urge, to do something about solving the parking problem.

At the present time there are many solutions that look very intriguing on paper but get no where because they are in the form of half truths. They are in part correct, but in their execution they reveal serious weaknesses What is necessary to get an effective solution to any problem is first to place the responsibility on somebody's shoulders to do something about it. Then all types of ingenuity are induced, thus solving any individual local problems such as those that have been brought up here in this discussion.

I should like to present an actual case which I believe reflects the probable effect of a zoning law and by inference the corresponding probable effect of the lack of such a law.

In the New York Herald Tribune of January 17, 1946, only a few days ago there appeared an architect's drawing and an article describing a new eight-story building for a well-known department store in one of the Boroughs of New York City as one of a $4,000,000 construction and improvement program. This building will add 80,000 sq ft of shopping space or an increase of 21 per cent The article boasted that the new building will contain an eight-story service tower which will *reduce traffic congestion by taking trucks off the street* and permit delivery of incoming merchandise direct to each floor as needed. No word was mentioned in this article about any provision being made for the parking of the autos of customers (author's italics)

Query: Why was provision being made to take trucks off the streets? Answer: Because the New York City zoning law requires department stores to provide one loading or unloading berth of a minimum size of 25 by 10 ft for each 25,000 sq ft and fraction thereof exceeding 5000 sq ft. of aggregate gross floor area Query: Why was no provision being made by this department store for the parking of customers' autos? Answer: Because there is no New York City ordinance requiring such provision

MR. LESLIE WILLIAMS, *American Transit Association*: May I speak on the point of retroactive zoning? It seems that machinery can be established to determine an amortization date which would not create unnecessary hardship to the owner of a property and still be within the realm of legal practicability. We have retroactive zoning in this regard applying to billboards The important point is to amend present zoning to require, not permit, all new buildings and those undergoing major alterations to provide facilities for automobile parking and truck shipping purposes in the degree needed.

DR D. R. LEVIN, *Public Roads Administration:* My comments center largely upon the limitations of Mr Cherniack's proposal to require owners of existing property, by statute and ordinance, to provide a predetermined amount of off-street automobile parking and truck loading areas within a period of 5 to 10 years after the adoption of the law.

Mr. Cherniack is to be commended for his progressive thought on the subject of parking. Lest his proposal for what amounts to retroactive zoning for parking be deemed to be a magic formula, however, let us examine into to what extent the judiciary has been willing to sustain the concept of retroactive police power controls. And it is the judiciary, in the final analysis, that determines the success or failure of a new legal device

Land-use controls, that is, zoning, platting and subdivision regulation, and set-back control, have been construed to be legally authorized under the police power of the State for the purpose of protecting the health, safety and general welfare of the community. As

due process of law protects the individual from the public, so the police power protects the public from the individual The police power is said to extend to all great public needs. It may be used as an aid of what is sanctioned by usage, or held by the prevailing morality, or by a strong and preponderant opinion to be greatly and immediately necessary to the public welfare. But it is employed merely to regulate the use and enjoyment of private property. (See Noble State Bank v. Haskel, 31 Sup. Ct 186 (1911)).

Land use controls, however, must be reasonable to be sustained under the police power. They must have a substantial relation to the health, safety, comfort, and convenience of the community, or they are untenable The courts have said that when the exercise of the police power is so arbitrary and unreasonable that the interference is in substance a taking of private property rather than a mere regulation of its use, it can be justified only as an exercise of eminent domain and therefore must be accompanied by express or implied provision for just compensation. (See Federal Eminent Domain Manual, Lands Division, Department of Justice, 1940, Sec. 7, page 23).

The constitutionality of land-use controls is firmly established today. But the application of the test of "reasonableness" to specific situations has been scrupulously delimited by the courts, particularly in the case of the retroactive exercise of land-use controls to existing structures and uses. The judiciary has held that as a general rule, retroactive application of these controls as with other police-power regulations is justified only if their relationship to public safety and health is real rather than fictitious. Even while paying lip service to this doctrine, there has been a judicial reluctance to impose any hardships upon property owners in such circumstances.

Logically, if the police power can be invoked to prohibit a new nonconforming use or structure for reasons of health, safety, morals, convenience and general welfare of the community, it should also follow that the police power can be applied to oust existing nonconforming uses. The validity of retroactive land-use regulation, however, has been sustained by courts of last resort only in California, Louisiana, and New York, and with decided limitations. This state of affairs has led some authorities to charge that land-use controls are more preventive than corrective and that their usefulness in protecting community interests is limited accordingly.

These principles, it should be noted, have been finally sustained with reference to subjects directly related to health and sanitation, safety, and specific hazards. To date, automobile parking facilities have not yet been placed in that category In fact, the provision of off-street parking accommodations needs yet to be firmly established as involving a public use. The achievement of that in itself may constitute a formidable task.

That once accomplished, the retroactive application of the police power may be attempted. After some years of study of the police power and the exercise of eminent domain, I would venture the opinion that it will take years of painstaking and arduous effort to achieve this latter objective, assuming it can be accomplished at all.

I might add, parenthetically, that the longer the period within which compliance may be allowed, the better would be the chances for acceptance of the concept The more closely such period coincides with the service life of a structure, the less of a hardship it would be to require the provision of off-street parking facilities in connection with it. The longer the period, the less retroactive the character of the application would be

I trust that these comments will not be misunderstood. I would be among the first to champion a new tool, if I thought it had fair promise to do the job. All I am pointing to here is that the retroactive application of zoning devices has enjoyed only the most limited kind of approval to date. Perhaps, in the course of time, such retroactive zoning may come to be accepted but in the meantime valuable time may be lost if we depend on it alone as an effective instrument in solving current parking problems.

In any event I shall always stand ready to lend a helping hand in any test case on the subject, for the final objective is indeed a worthy one.

MR. CHERNIACK, *Author's Closure:* In view of the wide differences of opinion between the author and Dr. Levin in our discussion at Oklahoma City, it is indeed gratifying to me to read Dr Levin's more formal and scholarly

discussion of retroactive legislation and find that our opinions are much closer than I had been led to believe. Dr. Levin believes that "if the police power can be invoked to prohibit a new nonconforming use of structure for reasons of health, safety, morals, convenience and general welfare of the community, it should also follow that the police power can be applied to oust existing non-conforming uses." But, continues Dr. Levin "This exercise of police power must not be arbitrary; it must be reasonable; the relationship between police power regulations and public safety and health must not be fictitious; it must be real." Good! Then he concludes that "it will take years of painstaking and arduous effort to achieve the desired result."

In this electronic air age in which we live what formerly took "years of painstaking and arduous effort to achieve" can now be compressed into substantially less time, if we have a will to achieve. If it's time that bothers Dr. Levin may I present the following program for achieving a complete solution to the parking problem via the proposed zoning law relating to existing buildings

Organize a committee of corporation counsels of a substantial portion of our cities. Let them prepare two uniform model ordinances; one relating to new and reconstructed buildings, the other to existing buildings. The parking and truck loading and unloading space requirements should be reasonable. The unit requirements in each city should be tailored to reflect local automobile and truck usage, and predicated on sound traffic engineering studies. If the committee members make up their minds collectively to make a concerted and vigorous defense in their respective state courts to have these ordinances judicially sustained, there is no doubt in the author's mind but what these ordinances can be put on the statute books of a large number of cities and be performing effective service within a period of less than five years. Thus "with a stroke of the pen," the traffic and parking problems in those cities would be solved and their future healthy growth assured for many years to come

MR. JOSEPH BARNETT, *Public Roads Administration:* It may be stated of Mr. Cherniack's paper that all of the several ideas therein have been presented before, yet the orderly appraisal of their importance, the sequence of attack presented, and the evaluation of their possibility of attainment are so ably presented that the statement becomes a valuable contribution in the solution of the terminal problem so necessary in most of our cities if a rounded program to successfully relieve traffic congestion is to be followed This discussion is limited to the final phase of the program presented, that of requiring owners of existing structures to provide off-street parking in a reasonable number of years In this regard I have read the discouraging statement by Dr. David R. Levin, but I have enough confidence in the reasonableness of the courts, when confronted with a problem the solution of which is vital to the well being of a community, to feel that a requirement of this nature will be upheld when the need is vital, the requirements reasonable, and the presentation forceful. Support for this feeling of confidence is drawn from decisions rendered on a law enacted nearly a half century ago regarding sanitary facilities for tenement houses in the city of New York As will be developed presently the cases are comparable.

Section 100 of Chapter 334 of the Laws of 1901 reads as follows:

"In all tenement houses existing on April eleventh, nineteen hundred and one, where a connection with a sewer is possible, all school sinks, privy vaults or other similar receptacles used to receive fecal matter, urine or sewage, shall before January first, nineteen hundred and three, be completely removed and ****. Such appliances shall be replaced by individual water-closets, * * * *. Each water-closet shall be located in a compartment completely separated from every other water-closet, and such compartment shall contain a window * * * *. The floors of the water-closet compartments shall be waterproof * * * *"

The constitutionality of the law was upheld in all Appellate Courts of the State by unanimous decision in the case of Tenement House Department vs. Katie Moeschen, 179 N.Y. 325, argued October 11, 1904, decided November 15, 1904. Some of the arguments against the Section's constitutionality and the Court's answers follow:

Expenses of alterations would wipe out owner's equity. Court's answer: Rental values would be enhanced

School sink was installed in compliance with orders of the Board of Health. Court's answer: The statute is within the constitutional powers of the legislature as a police regulation.

Act is discriminatory in that it applies to cities of the first class and then only to existing tenements. Court's answer. "Anyone in a crowded city who desires to erect a building is subject at every turn almost to the exactions of the law in regard to the provisions for health, for safety, from fire and for other purposes."

The defendant carried the case to the Supreme Court of the United States where in the October 1906 term, 203, U.S. 583, argued November 9, 1906, decided November 12, 1906, the judgment of the Tenement House Department against .the defendant as a penalty for failure to comply with the Section was affirmed with costs

Many years later the State passed the multiple dwelling law in which Section 250 made the requirements regarding water-closet accommodations more severe and, furthermore, made them apply to tenements in existence in 1901, the date of the old tenement house law. The constitutionality of these provisions was again challenged and the Courts rendered their decision in the case of Adamec vs. Post (Tenement House Commissioner) 273 N.Y. 250, argued January 19, 1937, decided March 9, 1937. A summary of the opinion upholding the Act, a reference to an older case in that opinion, and a summary of opinion in the reference case follow:

Summary of opinion. The provisions of the multiple dwelling law * * * requiring that buildings erected prior to 1901, in accordance with the requirements of the laws then in force, now comply with new requirements and higher standards enacted by the Legislature to protect the safety and health of those who may live in such houses, are valid, so long as the new requirements are reasonable, proper and fair when considered with reference to the object to be attained

"In this action to have the statute declared null and void, insofar as it applies to buildings erected before 1901, and to obtain an injunction * * * restraining the enforcement of the statute, the complaint was properly dismissed where it challenged the requirements of the statute solely on the ground that the cost of conforming to them would be unreasonable and out of proportion to the present value of the property The proportion of cost of the alteration to the assessed or even the market value of an old law tenement house can be no criterion of whether the Legislature has acted reasonably in requiring the alteration "

Reference· See Health Dept of the City of New York vs. The Rector, Church Wardens and Vestrymen of Trinity Church, in which the Health Department filed violations against six tenement houses and directed the owner to provide proper appliances to supply water on each floor of its tenement houses (decision Feb. 26th, 1895) 145 N Y 32

Summary of opinion in part. The Legislature, in the exercise of its power to conserve the public health, safety or welfare, may direct that certain improvements or alterations shall be made in existing houses at the owner's expense, and while the requirements must not be unreasonable, either with reference to its nature or cost, yet, when it clearly appears that it tends in some plain and appreciable manner, to guard and protect the public in the respects specified, that it bears equally upon all members of the same class, and that the cost will not be unreasonable, considering the character of the work required, with reference to the object to be attained, the requirement is constitutional and valid

What has all this to do with requirements for off-street parking and loading facilities to be provided by owners of existing properties? Well is it not obvious that the cases are parallel? The statute requiring owners to do certain things including installing water-closets was upheld because it is "within the constitutional powers of the legislature as a police regulation," and "the Legislature, in the exercise of its power to conserve the public health, safety or welfare, may direct that certain improvements or alterations shall be made in existing houses at the owner's expense " The privy had become a menace to health and it had to go. Congestion on some streets of the City of New York has become so great that it is a menace to the welfare of the community Anyone who doubts it should watch operation on the West Thirty Streets in New York City where loading and unloading from the manufacturing loft buildings are carried on throughout the day by sidewalk parking of trucks. One of the last acts of the LaGuardia administration was to pass regulations making these streets "express" streets. (They have been one-way streets for several years.) No parking of passenger vehicles is permitted on express streets and trucks can

park only long enough to unload and load. These regulations have helped some but the operation is so unsatisfactory and the streets clogged so frequently that access by fire fighting equipment would be retarded if not completely blocked; service to the buildings is hampered, and transportation impeded. On many of these streets both curbs are lined with trucks, tail to headlamp, and policing to prevent parking for a longer period of time than necessary for loading is impracticable. It is a sad commentary on the operation on the streets in this area that walking is recognized as the quickest means of getting from one place to another not too distant and an important vehicle for the short haul transport of goods is the small cart pushed by hand, a cart small enough to be maneuvered between trucks and, occasionally, over curbs and sidewalks. The use of the sidewalk by these hand trucks is done surreptitiously because it interferes with the heavy pedestrian movement and is outlawed so perhaps we are not far from the use of Virgin Islanders who walk so gracefully with a load perched on the head and arms akimbo.

The public welfare is definitely affected by such congestion and its resultant delays Delays in the transport of people and goods are costly and such costs ultimately are paid by the consumer, the public.

Another parallel is that of net cost to the owner of private property which may be considered at his gross cost or cost of the alteration less the capitalized value of the additional returns resulting therefrom. In the case of the law regarding old law tenements the addition of sanitary facilities brought increased rentals which were profitable returns on the investments made In the case of alterations resulting in off-street loading and parking facilities experience is not sufficiently broad to draw precise conclusions but it is certain that some returns will be forthcoming Surely the lessee of a loft in the West Thirties in New York City would be willing to pay a higher rental than he now pays if his goods could be moved in a shorter time and the cost of transportation thus reduced. One piece of corroborating evidence is a billboard on Broadway just north of the Metropolitan Opera House advertising the postwar construction of a huge loft building. Prominence in this advertisement is given to the fact that off-street loading platforms will be provided for the tenants.

Adequate returns are not necessary for the courts to uphold the constitutionality of a law requiring alterations to existing buildings as is evident in the decisions cited. It is simply one favorable factor which would be considered by the courts in determining reasonableness, one of the most important considerations in all law. The law would have a good chance of support by the courts if hardship to property owners is kept to the minimum Let us consider these same loft buildings in the West Thirties in New York City which I am using as an example. In most of them it is evident that the first floor has little frontage retail value. Business on the first floor is transacted much in the same manner as that of tenants above the first floor. Its chief advantage, incidentally, lies in its not being dependent on elevators and thus can transport people and goods to the sidewalk in a hurry, but there its advantage ceases for its people and goods are subject to the same delays due to street congestion as those of the tenants above The first floors usually have high ceilings and, of course, are closer to the foundations so that alterations to serve the intended purpose should not prove expensive The requirements of a law would have a good chance of being considered reasonable if applicable to these buildings, particularly if a choice is given an owner so that if he considers frontage retail value significant he can choose some other method such as the installation of rear loading docks or ramps to upper floors. If, however, the law applied to buildings on the corners or around the corners on the avenues where first floor rental values are high due to the retail nature of the street, owners could show the courts that rental losses are large, a fact which, regardless of legality, would weigh heavily in the minds of the courts in determining reasonableness. So that a law of this nature must be carefully drawn; but if so drawn should, in my opinion, have a good chance of sticking.

A law requiring the provision of off-street loading or parking facilities by and at the expense of property owners should be drawn separately for each city A statewide law, such as might be suggested by a first reading of Mr Cherniack's paper, should not be drawn to apply to all cities in a State, even for cities of the same size and population. Too many variable conditions affect the need for off-street loading and parking facilities and if the

law requires provisions which do not meet needs realistically it will have a poor chance of being upheld in court. A city with wide streets and light traffic volumes surely needs off-street loading facilities less than one with narrow streets, the capacity of which is insufficient to accommodate moving traffic A city with a good transit system might need off-street parking facilities less than one with a poor transit system. Careful consideration would have to be given this phase of the problem for low charge parking, while a desirable objective in itself, does encourage greater car usage and, if improperly located with respect to the street and commercial pattern, can increase congestion on some streets, congestion which can possibly be avoided by encouragement of the use of transit facilities, particularly if the transit facilities are underground or, possibly, consist of busses and trolley busses which do not themselves occupy such a large proportion of the street as do trolley cars. The law should be tailor-made for each city. While zoning for the regulation of new construction can be made city wide, requirements for altering existing structures by owners preferably should be made to fit neighborhoods, or streets, or parts of streets so that the hardship will be kept to the minimum and the law thus receive sympathetic consideration by the courts.

Dr Levin cites the fact that retroactive land-use regulations have been upheld by the highest courts in only three States and this is a discouraging fact indeed. Yet we should not refrain from using every possible tool in relieving traffic congestion in many of our cities A law requiring owners of existing property to alter structures or otherwise provide off-street loading and parking facilities would be a useful tool indeed and worthy of our best efforts in obtaining its enactment and approval by the courts. Patience may be needed but who can say definitely that it will not be rewarded. As an example, a law restricting access to certain main highways has had a rough childhood indeed and many highway doctors lost all hope for its survival yet it is blossoming forth into strong maturity and doubtless will have the increasing blessing of the courts As the folly and hazard of building main arterial highways with no control of interference from roadside businesses is appreciated the pressure for control increases and the views of the courts become increasingly sympathetic So do I believe will it be with a law requiring owners of existing buildings in many cities to provide off-street loading and parking facilities, particularly when, in the words of one of the decisions cited, "the requirements are not unreasonable, either with reference to its nature or cost, * * * considering the character of the work required, with reference to the object to be attained, * * * ."

SUMMARY OF RESPONSES TO QUESTIONNAIRE BY CITY TRAFFIC ENGINEERS, CITY PLANNERS AND RETAIL TRADE ASSOCIATIONS ON FEASIBILITY AND DESIRABILITY OF PROVISIONS IN ZONING ORDINANCES REQUIRING OFF-STREET PARKING OF AUTOS AND LOADING AND UNLOADING OF TRUCKS IN NEW OR RECONSTRUCTED BUILDINGS

MR. CHERNIACK. At the close of the presentation of the foregoing paper, a number of those present suggested that traffic engineers and others interested in the solving of the parking problem be sounded out as to their reactions to the author's recommendations Thereupon, Mr. S T Hitchcock, secretary of the Committee on Parking, prepared a questionnaire, responses to which determine the reactions of groups of interested parties

This questionnaire inquired whether it was feasible and desirable by a zoning law or an amendment thereto, to require that reasonable provisions be made for off-street parking of automobiles and off-street loading and unloading of trucks in new buildings to be constructed in the future and existing buildings to be reconstructed. It further inquired whether the respondent would consider the incorporation of such provisions in present zoning ordinances where there were no such provisions in existing zoning laws, as a means of assisting in solving the parking problem. Where existing zoning laws contained such provisions, the questionnaire asked for excerpts of such zoning provisions. Appendix 1 shows the questionnaire.

It was planned to distribute these questionnaires to the following three groups of interested parties in representative cities in the United States: 1. City Traffic Engineers, 2. Planning Officials, 3. Secretaries of City Retail Trade Associations. Mr. C. W. Prisk, Technical Editor of Traffic Engineering Magazine, a publication of the Institute of Traffic

Engineers, undertook to distribute the questionnaires to City Traffic Engineers. Miss Harlean James, Executive Secretary of American Planning and Civic Association, agreed to distribute questionnaires to city planners, members of the American Civic and Planning Association Mr. C. Irving Baily, Executive Secretary, American Retail Federation, distributed questionnaires to secretaries of City Retail Trade Associations affiliated with the American Retail Federation The author undertook to analyze and summarize the responses to these questionnaires

To date (April 1946) responses have been received from 37 traffic engineers in as many cities, from 54 city planners in 31 cities, and from 34 secretaries of city retail trade associations. (See Appendix 2 for list of cities represented by the residences of the three groups of respondents.)

In response to the query as to whether it would be feasible to require, by a zoning law or an amendment thereto, that reasonable provisions be made for the off-street parking of automobiles in new buildings constructed in the future or existing buildings reconstructed, it appears that the preponderant opinion of the three groups is that it is definitely feasible. A total of 36 of 37 respondent traffic engineers, 51 of 54 respondent city planners, and 22 out of 34 of the trade association secretaries voted such provisions feasible. It is interesting to note that city traffic engineers and city planners, who must live with the parking problem as part of their professional experience, feel overwhelmingly that such provisions are feasible. The secretaries of retail trade associations who have other problems to think about and who represent those that would be required to foot the bill for such provisions if required by ordinance so to do, are not so enthusiastic about the feasibility of these provisions as the other two groups

An even greater proportion deemed it feasible to require that reasonable provisions be made for off-street loading and unloading spaces for trucks in new buildings or reconstructed existing buildings Thus, 100 per cent of the traffic engineers, 96 per cent of city planners and 76 per cent of trade association secretaries voted these provisions feasible.

Apparently there is more agreement about the feasibility of provisions for loading and unloading of trucks than for provisions for the parking of autos

On the question as to whether parking and loading provisions were considered desirable, traffic engineers and city planners were unanimous and close to 80 per cent of the retail trade associations deemed such provisions desirable

In answer to the query whether individuals would consider incorporating such provisions

TABLE 1
RESPONSES FROM TRAFFIC ENGINEERS, PLANNING OFFICIALS AND RETAIL TRADE ASSOCIATIONS TO PARKING QUESTIONNAIRE

	Respondents	Cities
Traffic Engineers	37	37
City Planners	54	31
Retail Trade Associations	34	34
	125	76[a]

[a] Eliminating duplications

TABLE 2
Question 1 Is it feasible to make reasonable provision for the offstreet parking of automobiles requirement when buildings are constructed or reconstructed by an amendment to present zoning laws?

	Responses			Percentages	
	Total	Yes	No	Yes	No
City Traffic Engineers	37	36	1	97 3	2.7
City Planners	54	51	3	94 5	5 5
Retail Trade Associations	34	22	12	64 8	35 2

TABLE 3
Question 2 Is it feasible to make reasonable provision for the offstreet loading and unloading of trucks a requirement when buildings are constructed or reconstructed by an amendment to present zoning laws?

	Responses			Percentages	
	Total	Yes	No	Yes	No
City Traffic Engineers	37	37	0	100 0	0 0
City Planners	54	52	2	96.3	3 7
Retail Trade Associations	33	25	8	75 8	24.2

TABLE 4
Question 5 If there are no provisions in existing zoning laws requiring space for offstreet parking or loading and unloading of trucks, do you consider them *desirable*?

	Responses			Percentages	
	Total	Yes	No	Yes	No
City Traffic Engineers	33	33	0	100 0	0 0
City Planners	38	38	0	100.0	0 0
Retail Trade Associations	29	23	6	79 3	20.7

in present ordinances as a means of assisting in solving the parking problem, the vote ranged from 100 per cent to 84 per cent, "Yes."

A number of the planners stated that they, as consultants, had suggested the incorporation of such provisions in proposed ordinances, while others named cities that had adopted zoning laws which required provision for off-street parking. Thirteen cities represented by respondents to the questionnaires now have some off-street parking or loading provisions as part of their zoning ordinances. Los Angeles adopted these provisions March 7, 1946 Five cities have prepared preliminary or tentative drafts of either zoning laws or amendments thereto requiring provisions for off-street parking of automobiles and off-street loading and unloading of trucks. These are before their respective city councils for adoption.

TABLE 5

Question 6. Would you consider the incorporation of such provisions in present ordinances as a means of assisting in solving the parking problem?

	Responses			Percentages	
	Total	Yes	No	Yes	No
City Traffic Engineers	35	35	0	100.0	0 0
City Planners	49	48	1	98 0	2 0
Retail Trade Associations	31	26	5	83 9	16 1

An analysis of the existing or proposed parking provisions in the zoning ordinances of the respondent cities indicates that in 12 of the 17 cities provisions have been made to require off-street loading and unloading spaces for trucks. Existing or proposed zoning laws in 11 of the cities require off-street parking in new dwellings, 11 require this of public places of assembly Only 6 cities, on the other hand, require off-street parking of autos in commercial buildings (See Table 6.)

TABLE 6

PROGRESS IN INCORPORATING IN ZONING LAWS PROVISIONS FOR LOADING AND UNLOADING OF TRUCKS AND PARKING OF AUTOS IN DIFFERENT TYPES OF BUILDINGS

	1940 Population	Provision for Offstreet Loading and Unloading of Trucks	Provisions for Offstreet Parking of Autos		
			In dwellings	In places of assembly	In commercial buildings
Respondent Cities Where Zoning Laws Are Now in Effect					
1. New York, N Y.	7,454,995	x	—	—	—
2 Cleveland, Ohio	878,336	x	x	—	x
3 Los Angeles, Calif.	1,504,277	x	x	x	x
4 Kansas City, Mo	399,178	x	x	x	—
5. Waterbury, Ct	99,314	—	x	—	—
6. Chicago, Ill	3,396,808	—	—	x	—
7. Detroit, Mich	1,623,452	x	x	x	—
8 Nashville, Tenn.	167,402	x	—	—	—
9 Evanston, Ill	65,389	—	x	—	—
10 Washington, D C	663,091	—	x	—	—
11. Lansing, Mich	78,753	—	x	x	—
12 Richmond, Va	193,042	x	—	x	x
13. Piqua, Ohio	16,049	x	—	x	x
Total, 13	16,540,086	8	8	7	4
Respondent Cities Where Tentative Drafts of Zoning Laws or Amendments Are Now under Consideration					
1 San Francisco, Calif	634,536	x	—	—	—
2 St Paul, Minn	287,736	—	—	x	—
3 Dallas, Texas	294,734	x	x	x	x
4 Wichita, Kan	114,966	x	x	x	x
5 Toronto, Ont	657,612	x	x	x	—
Total, 5	1,989,584	4	3	4	2
Grand Total, 18	18,529,670	12	11	11	6

such provisions. Some, on the other hand, remarked that in very small cities and very large cities it would be found extremely difficult to incorporate such provisions into zoning laws and that these provisions would only aid partially in solving the parking problem

Respondents from a number of cities very kindly enclosed copies or excerpts from their

These 18 vanguard cities indicate a fairly

definite trend of this effective approach to the eventual solution of the parking problem Beside these 18 cities, several additional cities are now giving serious consideration to the preparation of zoning laws or amendments thereto to require parking and loading provisions in new or reconstructed buildings Other cities will undoubtedly follow in due course. Consequently this trend will bear careful watching on the part of traffic engineers, city planners and city officials, generally.

APPENDIX 1

QUESTIONNAIRE

1. Is it feasible to make reasonable provision for the offstreet parking of automobiles a requirement when buildings are constructed or reconstructed by an amendment to present zoning laws?

Yes ☐ No ☐

2 Is it feasible to make reasonable provision for the offstreet loading and unloading of trucks a requirement when buildings are constructed or reconstructed by an amendment to present zoning laws?

Yes ☐ No ☐

3 Are there any provisions in existing zoning regulations for provision of offstreet parking or loading and unloading of trucks?

Offstreet parking

Yes ☐ No ☐

Offstreet loading & unloading of trucks.

Yes ☐ No ☐

4 If there are such provisions, what are they? (Quote or attach a copy)

5 If there are no such provisions, do you consider them to be desirable?

Yes ☐ No ☐

6 Would you consider the incorporation of such provisions in present ordinances as a means of assisting in solving the parking problem?

Yes ☐ No ☐

7. Would you object to having your reply identified in a summary of replies from other cities?

Yes ☐ No ☐

APPENDIX 2

LIST OF CITIES REPRESENTED IN RESPONSES TO QUESTIONNAIRE ON FEASIBILITY AND DESIRABILITY OF PARKING PROVISIONS IN ZONING LAWS

City	1940 Population	Responses from City Retail Trade Associations	Responses from City Traffic Engineers	Responses from City Planners
1. Akron, Ohio	244,791		1	
2 Atlanta, Ga .	302,286		1	
3 Arlington, Va	57,040			1
4 Baltimore, Md	895,100		1	
5 Bay City, Mich.	47,956		1	
6 Berkely, Calif	35,547		1	
7 Boston, Mass	770,816	1	1	3
8 Bristol, Conn	30,167	1		
9 Buffalo, N Y ..	575,901	1		1
10 Cambridge, Mass	110,879			
11 Charlotte, N C	100,899		1	
12 Chicago, Ill	3,396,808	1	1	1
13 Cleveland, Ohio	878,336			2
14 Colorado Springs, Colo	36,789	1		
15. Dallas, Texas	294,734		1	
16 Danville, Va	32,749	1		
17 Denver, Colo	322,412	1		
18 Detroit, Mich	1,623,452	1	1	2
19 Evanston, Ill	65,389		1	
20 Flint, Mich	151,543		1	
21 Fort Wayne, Ind.	118,410		1	
22 Grand Island, Neb	19,130	1		
23 Grand Rapids, Mich	614,292	1		
24 Greensboro, N C	59,319	1		
25 Greenville, S C	34,734	1		
26 Greenwich, Conn	35,509	1		
27 Harrisburg, Pa	83,893			1
28 Hartford, Conn	166,267	1		
29. Indianapolis, Ind	386,972		1	
30 Kansas City, Mo	399,178	1	1	2
31 Lansing, Mich	78,753		1	

APPENDIX 2—Continued

City	1940 Population	Responses from City Retail Trade Associations	Responses from City Traffic Engineers	Responses from City Planners
32. Los Angeles, Calif.	1,504,277			3
33. Louisville, Ky.	319,077		1	
34. Miami, Fla	172,172		1	
35. Milwaukee, Wis	587,472	1		1
36 Minneapolis, Minn	492,370		1	
37. Nashville, Tenn	167,402	1		
38 Newark, N J.	429,760		1	1
39. New Haven, Conn.	160,605	1	1	
40 New Hope, Penn	1,053			1
41. New York, N Y	7,454,995			10
42. Oakland, Calif	302,163	1	1	
43 Oklahoma City, Okla	204,424	1		1
44 Omaha, Neb.	223,844	1		
45. Orange County, Calif	130,760			1
46. Ottumwa, Iowa	31,570	1		
47. Pasadena, Calif	81,864			1
48 Philadelphia, Pa	1,931,334			2
49. Phoenix, Ariz	65,414			1
50. Piqua, Ohio	16,049			1
51. Pittsburgh, Pa.	671,659			2
52. Portland, Ore	305,394	1	1	1
53. Portsmouth, Va	50,745			1
54. Providence, R I	253,504	1	1	2
55. Pueblo, Colo	52,162	1		
56. Richmond, Va	193,042	1	1	1
57. Rochester, N Y	324,975	1		
58 San Diego, Calif	203,341	1		
59. San Francisco, Calif	634,536		1	1
60. San Mateo, Calif.	19,403			1
61. Schenectady, N. Y.	87,549		1	
62. Seattle, Wash	368,302	1	1	1
63. South Bend, Ind	101,268		1	
64. Springfield, Mass.	149,554		1	
65. St. Louis, Mo.	816,048		1	1
66. St. Paul, Minn.	287,736	1	1	1
67. Terre Haute, Ind. . .	62,693	1		
68 Texas City, Texas	5,748			1
69. Toledo, Ohio	282,349		1	
70 Toronto, Ont. Canada	657,612		1	
71. Tucson, Arizona	36,818			1
72. Tulsa, Okla.	142,157	1		
73. Washington, D. C.	663,091		1	4
74. Waterbury, Conn.	99,314		1	
75. Wichita, Kansas	114,966	1	1	
76. Wilmington, Del.	112,504	1		
Total, 76.. . .	32,543,129	34	37	54