

Gary "Big Steel"—Geographic Design and Destiny

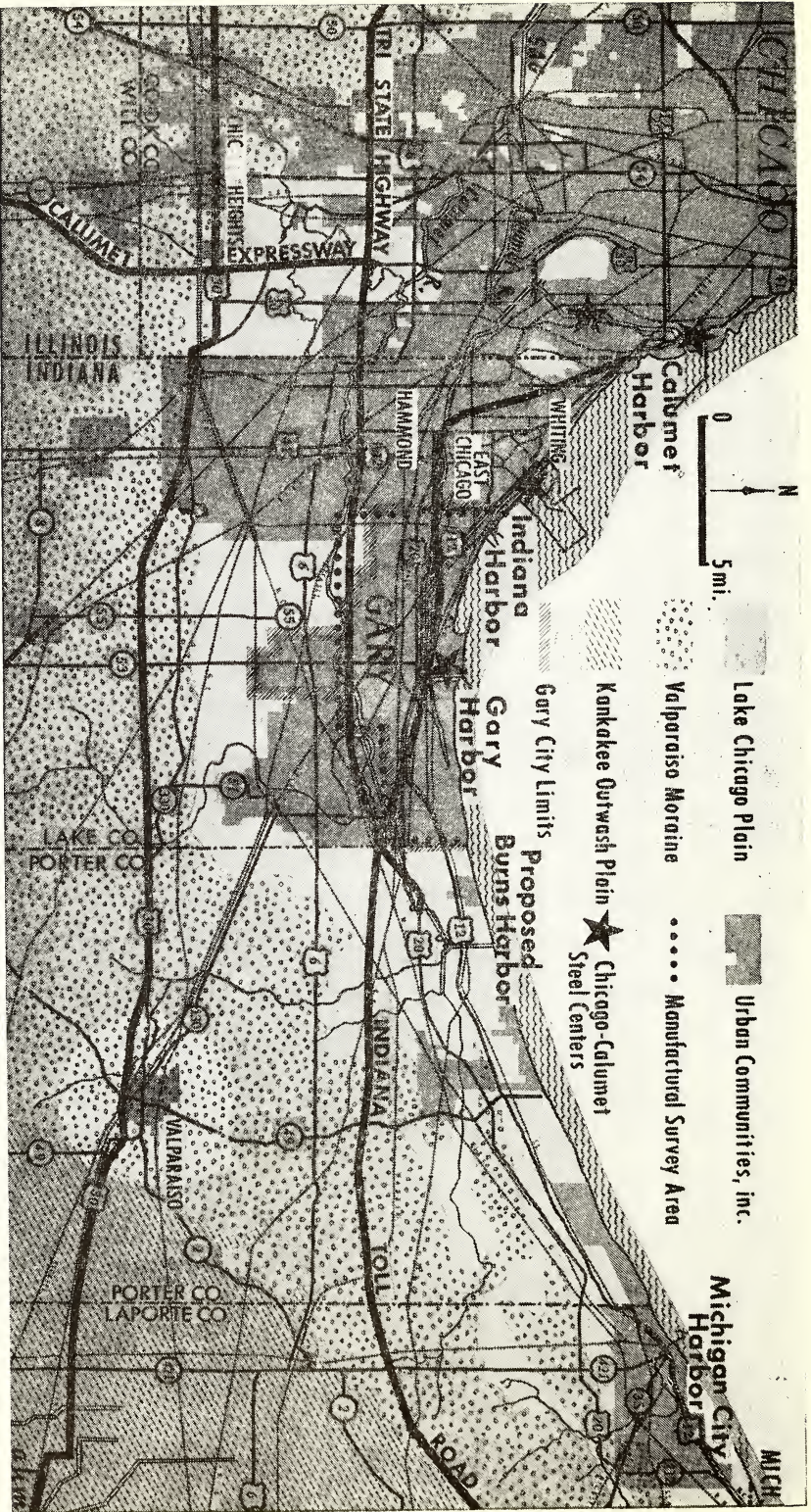
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"Big Steel" has probably received more attention for industrial analysis than any other manufacturing activity. This study does not purport to add materially to the usual literature on the place of steel manufacturing in the modern world, as is commonly given in treatises in economic geography on the subject, but is rather a geographic survey of the regional development of one of the major manufacturing communities, dominated by raw steel and fabricated steel products. As such, the study involves questionnaire and field exploration covering practically all basic industries, many of which are symbiotic in character, and is thus of special interest in areal analysis, both community- and region-wise. Our specific objective, then, is to see how the Gary community operates in a highly selective environment and how the manufactural potential of such environment is conceived by the industrialists themselves. The 1957 planning and zoning are geographically evaluated with a consideration of the effects of changing intra-regional and extra-regional factors on the competitive position of Gary in the U. S. and world "Big Steel" market. Among these are: newly constructed thoroughfares (Indiana Toll Road, Tri-State Highway), St. Lawrence Seaway development, Sag Channel enlargement, prospective exploitation of Mesabi low grade taconite ore, and innovations of accelerated and unified steel fabrications. The investigation is an historico-geographic approach based on documentary material, questionnaires, interviews, and personal field survey.

Gary's Regional Position in U. S. Steel Economy

Thirteen United States steel manufacturing districts are recognized for which regional steel production statistics have been published by the American Iron and Steel Institute. Such data reveal that the Chicago District, of which Gary is a part, leads in percent of U. S. steel ingot capacity—19.24 percent; followed in order by Pittsburgh (17.35); Philadelphia (14.17); Valley (Youngstown) (10.84). The remaining districts—West, Cleveland, Buffalo, Detroit, South, South Ohio River, Upper Ohio River, St. Louis, and Northeast—range from 5.5 down to .45 percent.

Gary is the leading steel community in the Chicago District. Its mills have an annual capacity of 7,204,000 net tons, followed closely by those of Indiana Harbor (5,800,000), and Chicago (5,441,000) (12) (Fig. 1). Thus we see the commanding position of the Chicago District and Gary's own strategic position in the Calumet Region and in the United States steel economy.



Gary Industrialists Are Aware of Regional and Topographic Locative Factors

Some research workers in the field of economic and industrial geography have made observations to the effect that manufacturers are not conscious of the significance of the locative factor in the selection of industrial sites. This study points to a very different conclusion. Of the thirty-seven manufacturing establishments questioned on this point, thirty-three responded with one, or more commonly, multiple reasons for locating on the Gary site. Normally at least two locational values were mentioned, and in one instance as many as nine factors were indicated. Recurring factors are arranged below in categorical order of decreasing frequency:

1. Land-Building Availability—Adequate site and available building space were basic considerations in plant location by one-half of the manufacturers. Representative statements follow: The building and not the area was important; because of overcrowded conditions in Chicago, needed more space; land was cheap; industrial property was available; building was accessible; one of the few sites available.

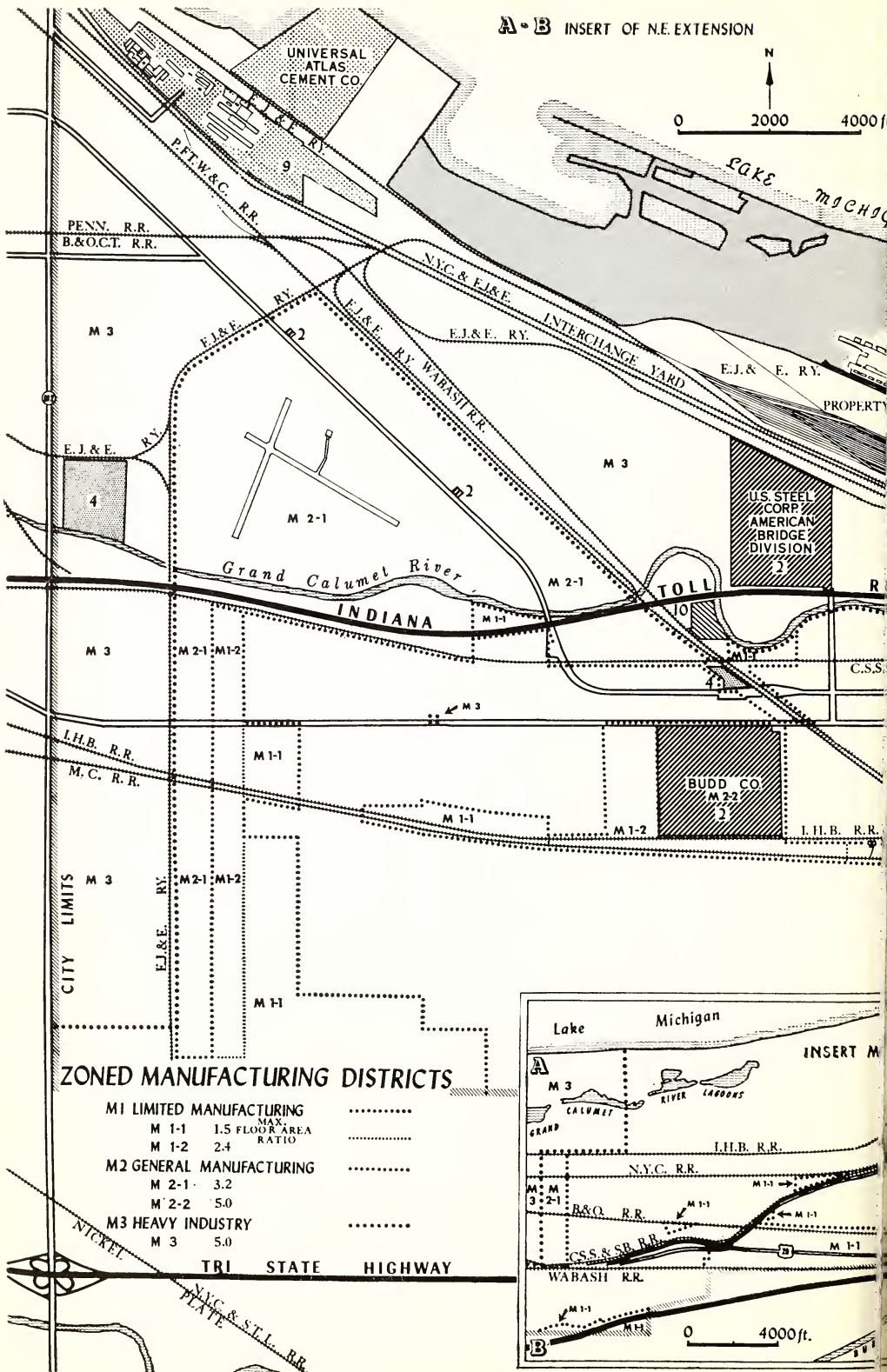
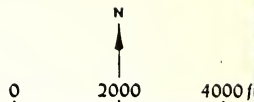
2. Market—Twelve firms, a third of the respondents, reported that market was a major consideration. Thus: Accessibility to market; Chicago was and is the main market; Mid-west and Chicago market area; markets in Chicago and Detroit.

3. Transportation—As pointed out elsewhere in this paper, the Gary community at the core of the Calumet Region, is a direct beneficiary of the converging lake, rail, and highway transportation pattern focused onto Chicago (Fig. 1). Accordingly, it is understandable that as many as eleven—about the same number as those reporting on the significance of market—evaluate this factor as a leading locative criterion. This is understandable also in view of the fact that though the Chicago area itself constitutes a major marketing center, marketing of steel and other products are by no means restricted to the head Lake Michigan area, but are distributed county-wide, especially throughout northeastern United states. Consequently transport facilities making ready connections of this region with more distant points are likewise essential. Typical comments follow: Lake Michigan has a water route of raw materials from Minnesota, with reference to iron ore; location on main trunk arteries; good railroad transportation.

4. Steel Symbiosis—As indicated in the classification of Gary industries in Figure 2, a preponderant percentage of the larger industries are fabricators of steel products attracted to Gary to benefit from the local steel supply. Nine of these industries regard this factor as of primary concern, variously expressed, as follows: This was in closer

Figure 1. Gary's geographic prominence stems from a number of intra- and inter-regional factors, here in part cartographically portrayed: 1. the Lake Chicago Plain, whose flatish surface is broken by only several ten-foot contours as illustrated in Fig. 3; 2. the head of Lake Michigan focus of Midwest water, rail, and highway transportation; 3. the areal labor, capital, and marketing integration of the Chicago-Calumet metropolitan community; 4. the competitive steel centers of the region.

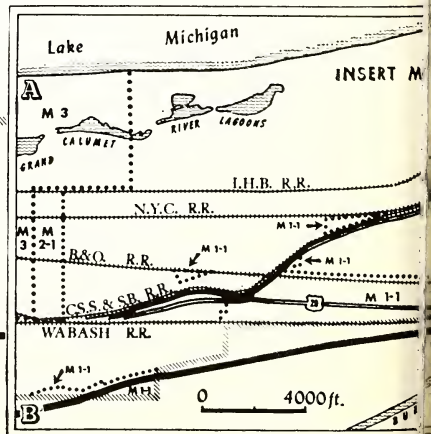
A-B INSERT OF N.E. EXTENSION



ZONED MANUFACTURING DISTRICTS

- M1 LIMITED MANUFACTURING**
- M 1-1 1.5 FLOOR AREA MAX RATIO
- M 1-2 2.4
- M2 GENERAL MANUFACTURING**
- M 2-1 3.2
- M 2-2 5.0
- M3 HEAVY INDUSTRY**
- M 3 5.0

CITY LIMITS **TRI STATE HIGHWAY**



proximity than Chicago to the steel mills and foundries; regional proximity to steel supply; regional position to accessible industries; U. S. steel located here; proximity to steel mills, which can use our machinery.

5. Labor Availability—The questionnaire records show that only three of the respondents specifically mentioned labor as a significant factor of site selection. Such a low figure—only nine percent—does not, however, reflect in this instance a true evaluation of labor since this item is often taken for granted as inherent in the large labor pool available in the Calumet-Chicago region. This reporting circumstance contrasts rather interestingly with studies of labor in other Calumet manufacturing centers, such as Michigan City, Indiana (16) and Chicago Heights, Illinois (17), where considerably much more emphasis was placed on the regional factor of labor requirements and availability. The relation of men to women labor in Gary was expressed by one firm as follows: Steel mills take all the man labor because of higher wages; women laborers in Gary are easy to get.

6. Other Miscellaneous Factors—The locative influence of utilities, such as power, water supply, waste disposal, drainage, etc., are commented upon elsewhere in this paper. Other specific factors include: local residence of founders, the non-competitive feature of a certain type of industry, allocation of specific industries in "assigned" territories, taxes, and lower labor costs.

Geographic qualities of site and facilities are not only a matter of single site consideration but of multiple sites as well, thus again pointing to the fact that many industrialists are very scrutinizing and selective in plant location and relocation. At least twelve spokesmen of firms indicated alternative site consideration. The following comparative advantages and disadvantages between Gary and alternate sites are thus noted: (1) The Gary district was recognized as having superior qualities in market and in local supplies of raw materials, thus saving on freight costs; and having a large reservoir of trained labor supply. (2) Comparative market possibilities are reflected in the statement: "Need of a paint factory in Gary." (3) The factors of water supply, drainage, waste disposal, transportation, markets, and taxes were cited as criteria for selecting Gary rather than Michigan City, Indiana; Bowling Green, Ohio; and Detroit.

Figure 2. This composite map was designed to inventory, classify, and relate the past, present, and prospective industrial pattern of Gary. Note 1. the "parent" Toleston rail junction with its associated cluster of small industrial sites; 2. the classification of the present "core" manufacturing establishments, with the distinctively large-sized sites identifying the steel fabricating plants; 3. the proximate position of the downtown business axis to the chief approaches of the U. S. Steel Corporation property; 4. the chief rail and road regional traffic service; 5. the 1957 zoning pattern, revealing the geographic concepts of the city administration and its consultant planners concerning the future availability and adaptability of sites destined for industrial appropriation: (Data from the following sources: Gary city base map; city ordinance planning brochure material (Everet Kincaid and Associates, Consultants); questionnaires and field survey. Not recordable on map of this dimension are six industries to the east and four to the south.

Local site relocation within the last ten years is largely reflective of expansion needs in building space.

Historical-Geographic Perspective

How the small struggling community of Gary, Indiana, became one of the world's largest steel producing centers is a fabulous tale. The development of the manufacturing region at the southern end of Lake Michigan may be divided into three periods—pioneer, development, expansion.

The Pottawatomie-Pioneer Stage—The old Sauk Indian trail was the most important east-west route through the Calumet area in the early days before permanent settlement along the southern end of Lake Michigan (14). This trail has subsequently become the route of Indiana Highway 330, the old Lincoln Highway. Early settlers traveled this Sauk trail as they proceeded westward through the then wilderness of the Middle West.

The Pottawatomie trail, another early Indian-Pioneer line of communication traversed the Calumet area from the northeast, reaching a terminal point at the present site of East Gary, Indiana. With the coming of the White man, villages bloomed forth at the junctions and terminals of the old trailways (15). In 1852 the Michigan Southern Railway pushed a rail line through the virgin land around the lower end of Lake Michigan, and some time later the Michigan Central Railroad began operations in the same area. The expanding population caused the rail companies to expand their services, but compared to central and southern Indiana, northwestern Indiana was extremely belated in settlement. As indicated on the Toleston Quadrangle, surveyed by the U.S.G.S. in 1897, only hamlets with a dozen to a score dwellings each existed on the site occupied by modern Gary, and numerous sections in the area do not even show a single rural dwelling (Fig. 3).

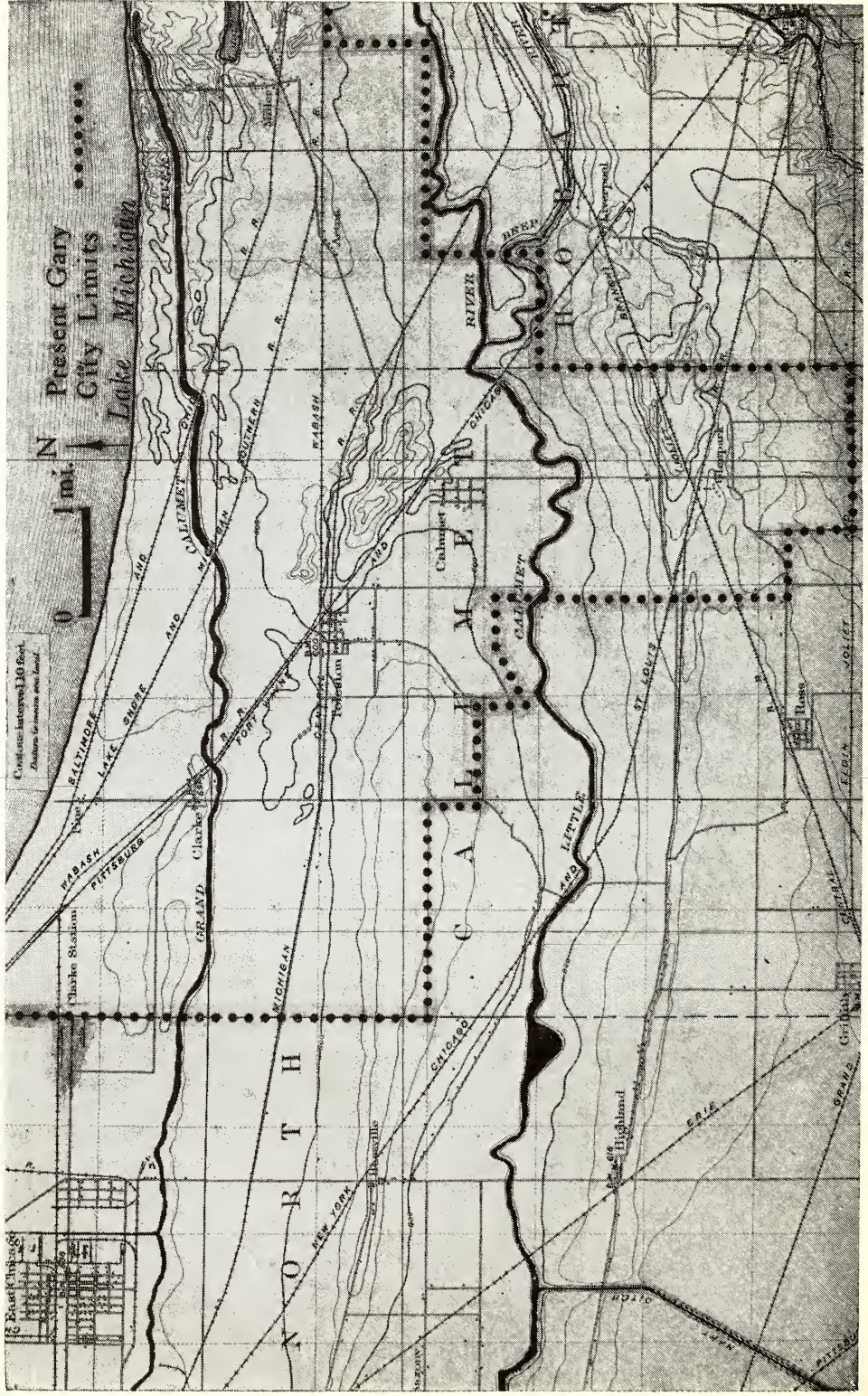
Sparse Occupance a Major Factor in Plant Site Selection and Area Development—The United State Steel Corporation sought a site in the Great Lakes area on which to build the world's largest steel mill. The lake region was chosen for the company wished to have its new steel plant located half way between the rich iron ore deposits of northern Minnesota and the coking coal deposits of Pennsylvania and West Virginia. Waukegan was suggested as a likely site, but investigation proved that the area was too congested for the building of a multi-million dollar steel plant. By contrast, the barren dunes and marsh wastes at the head of Lake Michigan in northwest Indiana, had been hitherto so repellent to human settlement that the United States Steel Corporation found here available 120,000 acres of uninterrupted space ideally suited to unimpeded plant planning.

The task of developing the site for Indiana's first steel mill was begun on March 12, 1906, and work toward the building of a new community for the employees of the steel company commenced on April 18, 1906. Dunes were leveled, trees removed, swamps filled, and the channel of the Grand Calumet River was changed. Only a little over two years later, on July 23, 1908, the first ship load of iron ore from

Contour interval 10 feet.
Datum for mean sea level.

0 1 mi.

N
Present Gary
City Limits
Lake Michigan



the Minnesota pits entered the nearly formed harbor on the Calumet River. This initiated the production of iron and steel destined to make northwestern Indiana the primary steel-producing section of the Chicago region.

While the steel mills were being erected, feverish activity was being carried on in the building of the new community. Hundreds of workmen were engaged in erecting a "model industrial city"; streets were laid out, commercial buildings were erected, and homes for the steel mill employees were developing in orderly rows. By July 17, 1906, the town absorbed Toleston and incorporated under the name of Gary in honor of the Chairman of the Board of United States Steel—Judge Elbert H. Gary (3).

The Expansion Stage—The large expanse of uninhabited level land, excellent water and rail transportation, a large important nearby market—Chicago, sufficient labor, together with the insight of the founders, caused the Gary industrial complex to mushroom into a gigantic steel empire.

A year by year chronological listing of the various industries that sought Gary as their home brings out interesting observations on the manufacturing picture of northern Indiana. The founding by the United States Steel Corporation of the first steel mill in 1906 immediately brought symbiotic establishments into the region. In 1909, the American Bridge Company built a fabricating plant in the Calumet district so as to be close to a major source of iron and steel. In 1910 the Union Drawn Steel Company, a division of Republic Steel Corporation, began operating, and during the same year the Gary Sheet Mill of the American Sheet and Tin Plate Company erected a Mid-west operational plant. In 1936, this company merged with the Carnegie-Illinois Steel Corporation, a merger which resulted in the world's largest sheet and tin mill.

Following the incorporation of the early manufacturing concerns in the Gary area, many other industrial groups were established. Two plants appeared on Gary's industrial horizon in 1906; one in 1908; one in 1910; one each in 1912, 1913; one in 1918; two in 1919; one each in 1925, 1926, 1927; one each in 1930, 1931, 1934, 1938, and 1943; two in 1946, one in 1947, three in 1948, 1949, 1950; one in 1951, and one in 1954. These later industries are either directly or indirectly connected with steel fabrication, or are service industries supplying the needs of the industrial workers. The geographic pattern reveals two areal differentiations—the lake side of heavy industries; the "interior" light industries (Fig. 2).

Figure 3. This topographic section of the U.S.G.S. Toleston quadrangle depicts the contour and culture of the Gary region as it looked at the turn of the 20th Century. Noteworthy are the relative contour-less topography and the open spaces bidding for occupance, destined to set the stage (starting with 1906) for the development of the leading unified steel manufacturing center in the United States. A comparison of the position of Toleston in this figure with that in Figure 2 affords space and time perspective of this antecedent important rail junction to the modern Gary steel metropolis.

Raw Materials Readily Accessible

The raw materials used by the manufacturing industries of the Gary complex are diverse in character and in origin. They include mineral raw materials, primary metals, lumber, and agricultural products. Iron ore, coal, and limestone, plus primary steel products, form the bulk of the raw materials. Of thirty-three concerns investigated, fifteen (forty-five percent) either produced primary steel metal or fabricated the primary metal into useful articles of commerce.

The principal source of iron ore for the Gary blast furnaces is the Mesabi range of northern Minnesota; the mines of northern Michigan are a secondary source. Since the rich hematite ores of Minnesota are rapidly being depleted, processes are being developed by which the leaner taconite deposits may be utilized. Recently the Cerro Boliva deposits of Venezuela have been opened and are supplying a substantial amount of iron ore for the Gary steel plants. With the opening of the St. Lawrence Seaway and the depletion of the Mesabi hematite, Venezuelan iron should become an even more important source. The Canadian Laurentian province also is a promising prospect. Scrap metal, an important auxiliary source of iron, comes principally from the Chicago-Gary scrap metal market. Coking coal, the charging fuel in the iron and steel blast furnace, is obtained from Kentucky and West Virginia. Steam coal is available from the proximate fields of central Illinois and southern Indiana. Limestone, the primary fluxing agent, is transported by lake freighter from the quarries on Lake Huron centered in part on Roger City, Michigan.

The fabricative industries, using semi-finished steel as their raw material, obtain their materials locally, taking advantage of proximity of the primary producers. This reduces the expense of shipping bulk commodities. The food processing industries procure their basic materials from the surrounding country-side. The textile fabricators utilize the excess female labor of the region. The New England seaboard and the southeastern Atlantic coastal states are the prime sources of textile bolt material. Wood is procured from the northwestern states and from special lumber mills in the Chicago region which specialize in rare woods. Miscellaneous items come from a wide diversity of sources, but the Middle West is the prime supplier of raw materials.

Public Utilities Adequate

Abundance of water is a prerequisite to any extensive industrial development. Particularly is this true of a large iron and steel manufacturing center, such as Gary. Water, in large quantities, is required for the processing of iron ore into pig iron and for the fabrication of this pig iron into alloy steels and steel products. Thus White, in emphasizing water resources in this connection, alerts us to the data in *Steel Facts and Power* that as much as 57 tons of water are used in the processing of 3.2 tons of charged blast furnace materials. Thus the availability and cost of an ample supply of water of suitable quality is a very significant factor in steel manufacturing. "In the steel industry the cost ranges from 5 mills to as much as 15½ cents per 1000 gallons. . . . In the Chicago-Gary district the cost is estimated at 0.2 cent per

1000 gallons" (19). The majority of industrial concerns draw upon the Hobart Water Company to supply them with their needs. Four industries of those contacted have their own water facilities—the United States Steel Corporation operates its own intake plant on Lake Michigan; the Mono-Sol Corporation maintains private wells; the Tanktainer Welded Products Incorporated operates wells on its property; and the Steiner Paper Company utilizes well water plus water from the Calumet River obtained by private intake. Surface water is used by the majority of the manufacturing concerns for domestic as well as industrial processes. Where specific water qualities are required, such as in the paper manufacturing industry of Gary, ground water has the advantage of remaining nearly constant in temperature and chemical composition throughout the year.

Availability of adequate electric power from the Northern Indiana Public Service Company has been another strong influence in attracting many manufacturing companies to the Gary district.

Labor as a Locational Factor

Labor is an important factor to any company contemplating locating in any region. From a superficial glance at the industrial complex of Gary it would appear that the different types of labor used in the manufacturing concerns would not be great since steel and steel products make up the bulk of manufacturing in the Gary district. However, a closer observation reveals that the types of labor are highly diversified—unskilled, semi-skilled, skilled, and professional. The list of employment types can be broken down into two major categories: (1) general labor for which the industries of Gary must compete with manufacturing plants in the Calumet-Chicago area; (2) labor which is peculiar to the steel industry, such as is skilled in metallurgy. "Big Steel" accounts for well over four-fifths of Gary's industrial employment. By far the largest number of workers in the iron and steel mills are in the first category. Inasmuch as general labor is relatively immobile, the steel industry needs to be so located as to obtain an adequate supply of this type of manpower. The labor market for the Gary manufacturing concerns extends beyond the municipal boundaries of the city. Labor, within a thirty-mile radius in Lake and Porter counties, which includes the towns of East Gary, Miller, Chesterton, Hobart, Hammond, Valparaiso, and Crown Point (Fig. 1) accounts for all but a small percentage of the force not obtained from Gary proper. The private automobile and local bus lines, which ply to all parts of Gary, provide the chief means of transportation for the industrial workers.

The ratio of men to women in the general labor class is approximately three to one. Of the 57,689 employed persons in 1950, 13,818 or 28.1 percent were women. The largest percent of women is employed in the textile and apparel industries, which benefit from a cheap supply of female labor and its ready availability in the large Chicago metropolis and community. The second class of labor, the specialized group, is far more mobile than is general labor and can bargain more favorably than can common labor. Since skilled and professional personnel is

mobile, the location of industry is not particularly dependent on the Chicago regional reservoir.

Transportation and Markets

Gary is located on highways, railroads, and airways focused on the Chicago metropolitan region. It is served by a number of major trunk line railroads—Baltimore and Ohio; New York Central, and the Michigan Central Division of the New York Central; the Wabash; the Elgin, Joliet and Eastern; and the Pennsylvania (Figs. 1 and 2). Two belt lines connect the trunk railroads and contribute to the further effectiveness of the rail switching system. These lines—the Indiana Harbor Belt Railroad, and the Elgin, Joliet and Eastern Railway—provide rapid cheap (transfer) conveyor service for the primary railroads. In addition, the high speed electric railroad—The Chicago, South Shore and South Bend—provides excellent commuter service for Gary employees.

The city's location is strategic not only in terms of rail connections, but also for highway transportation facilities. U. S. highways 6, 12, 20, and the Tri-State Highway and Indiana Toll Road connect Gary directly with regions to the west and the east. Dual lane U. S. 30 lies within a few miles to the south of the city. State routes 51, 53, and 55 approach Gary from the south, thus completing a closely meshed highway net (Fig. 1). This serves both as access conveyor of raw materials into Gary and a major means of distributing finished and semi-finished products out of the Calumet district. The majority of industrial concerns depend more heavily upon highway transportation than on rail because of speed, convenience, and cost. A few are interdependent upon both rail and highway; a small minority uses the railroad exclusively.

Water transport facility is restricted to the transportation of raw materials for the iron and steel works. Due to winter blockage by lake ice, it has been necessary for the steel companies to obtain a supply of iron ore to tide over the winter period—from approximately late November until late March or early April. Ice breakers are now being experimented with, however, to extend the water transport season.

A mature industrial community, Gary has a national market, and for specialized products an international market. A large part of the products, such as pig iron, remains within the region to be refined into various articles of commerce, while others find their way directly into the stream of retail and wholesale trade. The Calumet mills occupy a strategic geographic position of capitalizing on the accelerated demand for steel in the agricultural, industrial, and commercial development of the Midwest, Northwest, and South. Thus, Appleton in a study of the economic geography of this steel district, already in 1925, observed: "The dominant economic activities of this market are associated with agriculture, mining, cattle raising, and many phases of manufacture and transportation. . . . Large quantities of wire products are required for fencing and other purposes in the farming and grazing areas where lumber is scarce. . . . Galvanized sheets also form . . . a substitute for lumber. . . . Growth of population and urban centers . . . has

increased the demand for structural steel. . . . Reinforced concrete . . . requires large amounts of iron and steel bars. . . . The enormous growth of the automotive industry has been responsible for a large increase in the production of plates, bars, and sheets. . . . The expansion of manufacturing in the Northern Interior . . . has stimulated the production of many kinds of machinery. . . . The extensive canning industry of the Northern Interior provides another important use for steel. The large quantities of fruit, milk, vegetables, corn, and meat, which are canned each year, create a large demand for tin plate, which is produced extensively in Gary" (1).

The many demands for Calumet steel by the ever-increasing and ever-growing markets attendant with the shift of the U. S. population center westward has more than justified the expectations envisioned by Appleton barely two decades after the founding of the Gary plant. The acceleration of markets within the last quarter century has been even more spectacular. With the multiplication and diversification of industry Gary fabrications compete in more distant national and even international markets, supported by far-sighted policies of industrial planning and zoning. There appears to be a concentration of markets in the eastern two-thirds of the United States, the cities of the American Manufacturing Belt accounting for the greatest markets. Chicago being a close neighbor and connected with Gary by excellent transportation facilities provides the greatest marketing area for the finished products of Gary. This is an ever expanding market which will serve the Gary complex for many years.

Impact of Modern Technological Developments

New technological developments in the past several decades are reflected in Gary's phenomenal industrial expansion. At least eleven Gary industries report extraordinary expansion in area occupation, building enlargements, volume of products manufactured, as well as, in most cases, in a large corresponding increase in employment. Thus the following representative comments: In 1951 we added 47,000 square feet in floor space; originally investments expanded 200 percent; started with 2,000 square feet of store space, today 12,000 square feet; expanded in 1946-47 to double original size; have doubled production in two years.

Revolutionary innovations in various alloy steels and increasing demands for such by the increasing diversification of construction requirements are primary factors in the expansion of Gary industries. Likewise, new machinery installations or processes are mentioned in our survey repeatedly. Emphasis is indicated on "increasing speeds" in many of the major establishments; also conversion to automatic welding. Along with the development of new uses and new markets of steel is the expansion of the facilities of transportation, particularly in trucking service. Extra-regional influences are also recognized. Thus it is observed that generally "chemical industries are gravitating to the Mississippi-Ohio River system because of availability of petroleum and raw materials from the Gulf Coast area, and because of coal-tar sources of raw materials in areas reached by the northern end of these rivers."

Problems Primarily Non-Regional

Though some twenty-one firms reported some type of problem which operated restrictively or disadvantageously to business, relatively few of the specific problems mentioned seem to be definitely related to the Calumet region, or to the Gary district. They involve such broad categories as transportation costs, high taxes, and occasional labor strikes, such as may be found in many other industrial sections of the United States. And it appears also that freight rates on the heavy fabricated steel products are of paramount consideration. Unlike raw ore material, they reach their markets by rail or highway. And these are commonly the basis for the statement of "high cost of transportation." Transportation to distant points also often necessitates the building of expansive and expensive warehouses, established in some cases as far as the east and the west coasts.

Though ore transportation costs by the Lake Superior-Lake Michigan route are among the lowest in the world, a different problem of transportation arises in the freezing over of the waters in the mid-winter months, as previously mentioned, requiring stock-piling of ores during the open navigation season.

Labor—Judging from the very small number reporting on labor problems, namely only four, we would conclude that aside from "strikes" characteristic of other industrial communities, Gary does not have a particular critical labor problem. Only several reported labor shortages, one such observation being "when things are good, efficient help is hard to find." This same respondent reported that a considerable part of the labor force is now made up of immigrants from the South.

Industrial Land—Only five of the industrialists specifically pointed to any local industrial real estate problems. These will be referred to under the section on community planning.

Governmental Controls—Strikingly few, then, as are the comments concerning defective qualities of region or site for the location of the manufacturing industries in Gary, grievances on governmental regulatory measures and costs involved elicited some comment by almost everyone of the questionnaired respondents. "Excessive taxes" heads the list of such grievances, no less than nineteen specifically accenting this phase of cost production. Tax figures are not available from other steel centers of the United States to indicate whether such costs are higher in Gary than elsewhere. Several comments, however, may be quoted to indicate the views on this point: Unfair and duplicate tax laws, including federal and state transportation, gasoline, telephone, and power taxes; extra gross state income taxes; taxes are too high for new business; high taxes have ruined . . . future expansion. Complaints on other general government regulatory and costly items include the following: Increasing parcel-post rates; transportation control laws; workmen compensation, "fair labor" . . . acts, fair employment acts; cost of required tests; governmental controls; high over-head due to keeping own government records; strict ordinances as to quality of products; truck licensing, state and city; certain labor legislation.

The "Gary Industrial Foundation, Incorporated" Seeks to Broaden the Manufacturing Base of Gary

A major contributing factor to the phenomenal industrial expansion of the entire Calumet Region and particularly of the Gary district is not revealed in maps, nor even in the landscape. In addition to being supported by most active chambers of commerce organizations throughout the industrial community, several of the leading Calumet industrial areas have the benefit of specific industrial organizations committed to the task of improving environmental facilities to attract industry. Thus we note the Greater Michigan City Industrial Committee at the northeast extremity of the Calumet Region, and the Manufacturers' Association, embracing several industrial communities centered upon Chicago Heights on the Illinois side of the west end of the Calumet Region (Fig. 1). In 1945, a similar organization known as the "Gary Industrial Foundation, Incorporated" (Fig. 2) was organized for the following purposes: "To promote, foster and encourage post-war industrial development in and about the city of Gary, Indiana; to solicit and receive contributions of money and property, real and personal; to assist by means of loans or otherwise manufacturing plants and other employers of labor not located within the Gary district or desirous of so locating; to aid in the creation of employment opportunities for returning servicemen and women; and to operate and function as a civic organization for the general betterment and welfare of Gary, Indiana, and its citizens" (5). The organization consists of a Board of Directors of twenty-one members, and services are "performed without gain or profit to its members" (4). The annual reports issued by the organization reveal a close inventory on industrial developments and future potentials, as well as the diverse types of services performed by the organization. One of the major objectives of the organization is to seek diversity of industries. Thus, in its tenth annual report (1954-55), attention is directed to the fact that "more than twenty-five industries of various employment capacities have increased the job opportunities more than three thousand" (6).

Alerted to the keen competition for industrial promotion of other regions in the United States, the foundation recognizes the need of not merely publicizing the opportunities for industry in the Gary district, but also to be of specific help in locating and developing industrial property. Thus again, the various reports show the organization's specific interest in industrial real-estate: "In the past fiscal year (1954-55) there has been the initial development of some of the two hundred and forty-five acres of industrial land that will comprise the Gary industrial district. Filling and grading of the south end of the smaller tract involving some ten thousand cubic yards of fill at an expense of \$7,000 has made that area available for the establishment of the first industry to occupy a parcel. . . . The development of Gary industrial district should proceed through continual improvement of sites and the extension of water, sewer, and roadways into the northern part of the smaller sections. Plans should be prepared for the development of the larger tract after the construction of the Toll Road. . . . Some studies have

been made and a topographic survey completed for the purpose of determining the probable cost of developing the 170 acres in the larger site between 15th Avenue and the Wabash Railway extending from Mississippi Street to the Toll Road entrance" (5). The 12th annual report (1956-57) lists fifteen firms which "have been served by grants, loans, and services in a program to advance the industrial development and job opportunities in Gary" (6). This is reported as having added \$5,000,000 to the assessed valuation of taxable property in Gary and as adding 3,000 persons to the industrial payrolls.

Future Perspective

Expansion—Lake County, particularly the northern portion in which industries are located and of which Gary may be called the industrial capitol, has recently witnessed one of the largest industrial and population growth in the state of Indiana, or in the Midwest, for that matter. It is the leading Indiana county in value added by manufacturing—\$965,314,000, as compared with Marion County, including Indianapolis, the next highest (\$844,783,000) (18). "Total value of building starts in Lake County in the nine months, that is the first nine months of 1957, was \$69,719,552 (10a). Considering its relatively late start in Indiana's industrialization, this northwest corner of the state thus shows promising upward curve in industrial development.

Seven of the establishments surveyed anticipated substantial future growth. As one firm spokesman observed: "Continued population growth, along with sound sales promotion, makes future bright." Another representative comment points to new markets: "We look to probable expansion in capacity in present undeveloped territories, i.e., the South as a whole, northern Minnesota, Wisconsin, Michigan, the Northwest (Oregon, Washington) and Canada.

Technological Impacts—Increasing efficiency of technological processes is another category of anticipated expansion possibilities: Some day the steel operation will be one continuous process from raw materials to finished products; the development of automatic welding and so forth will reduce costs; new structural designs and fabricating methods help to rejuvenate this phase of industry; expansion will extend into as yet untouched or undeveloped fields of steel production. Of the twenty-five firms reporting for this category, only two or three were seriously concerned with curtailment of markets for their products either because of critical competition or other factors. Technological advances in exploiting the leaner iron ores of the Great Lakes Region, such as the Mesabi taconite, reassure the Chicago-Gary district a regional supply of ore for many decades to come, after the richer hematite is exhausted. Taconite calls for particular beneficiation treatment, but this is now in sight: "Since every large ore producer in the Lake Superior District has established well-equipped research laboratories, it is entirely conceivable that within twenty-five years commercial operations will be established on the Mesabi Range for the non-magnetic taconites. . . . By the beginning of the next century, shipments of taconite concentrate could rise to 60 million tons available for transportation on the Great Lakes" (13).

Regional Transportation Developments and Port Projections—While the steady growth of the Gary industries thus seems well assured in view of the survey data and promotional and planning activity cited above, there appear as yet no available measurable criteria for predicting just what effects newly established and recently proposed transportation and port developments have, or will have, upon the immediate industrial vicinity of Gary. We have here in mind: (1) The scheduled completion of a 27-foot channel of St. Lawrence Seaway in 1959; (2) a contemplative completion of the Cal-Sag project by 1963; (3) the controversial projection of the Burns' Ditch development of a harbor and port for northwest Indiana, only some five or six miles east of Gary (Fig. 2).

As indicated by a steel fabricator in Gary, establishment of contemplated steel industries would definitely result in competition with certain Gary steel manufacturers. Another observes: "It would further depress the social conditions and cause a greater unbalance of the economy." However this may be, it is obvious that the establishment of new industries about a port would result in an acceleration of the already phenomenal expansion of population eastward along the south shore of Lake Michigan, which may well result ultimately in a conurbanization of the entire lake shore all the way to Michigan City (Fig. 2). Needless to say, many of the residents of the area who now work in Gary, and many others who have come to establish their homes in the region, as well as all those in the greater Midwest who accent the amenities and aesthetics of living, are alarmed lest such progressive industrial development finally encroach upon the last vestiges of the picturesque lake-beach-dune-forest landscape, unique in historic tradition, in recreational facilities, and in geologic and biologic field studies.

In an article, "Indiana and the St. Lawrence Seaway," the *Indiana Business Review* points to "advantages and disadvantages of a harbor at Burns' Ditch." In its comparative analyses of existing harbors and other proposed port sites, it points to the disadvantages of deep-sea harbor developments at East Chicago, Michigan City, and Gary because of the built-up character of the environs by private industry. "Gary has no public shoreline, since almost all of its shoreline is owned by the numerous industries located in the city. There is no chance for public harbor development in this congested area. . . . The proposed Burns' Harbor lies on the eventual extension of the Calumet-Sag, which has been authorized for extension eastward to Clark Street in Gary. Any future Sag Canal extension undoubtedly would skirt the southern edge of Gary, rather than continue to the center of the city. The canal then would follow, more or less, the route of the Little Calumet River eastward to within a few miles of the proposed Burns' Harbor if this channel were developed, it would connect to the Illinois River, the main barge-line link to the Mississippi waterway in the west" (11). The extension of such additional barge transport might well bring some commercial benefit to the Gary community.

Effects of New Toll Road and Projected Tri-State Highway (Fig. 2)—It seems too early to measure the extent to which these new highways will facilitate trucking and passenger service, regionally and

intra-regionally. "Faster delivery" and "convenience for salesmen" were a few of the observed comments on advantages, while several others recognized no perceptible benefits to their particular establishments. While specific plant benefits may not be apparent, there is no question but what these major thoroughfares substantially help to relieve increasing critical traffic congestion in the Gary-Chicago area as well as accelerate highway transport to distant points.

Blueprinting the Future Industrial Pattern of Gary Through Comprehensive Geographic Survey and Planning

Having dealt in the previous sections with the larger regional geographic aspects to which the destiny of Gary's industrial development is related, let us now consider those local design factors which must be properly blue-printed in order satisfactorily to co-ordinate them with the extra-regional pattern of Gary's coveted destiny—an enduring favorable competitive market in steel supplemented by an extension of markets for diversified manufactured products related and unrelated to "Big Steel."

In terms of the local landscape the question logically arises, "Does Gary possess the geographic attributes of desirable quantity and quality of industrial sites presently occupied and additionally zoned for future potential appropriation by industry?" The Indiana Department of Commerce, Planning and Development, particularly emphasizes additionally the *availability* of site, i.e., areas not only zoned for industry, but "either optioned or owned by an individual or an organization from whom it may be purchased at a firm price attractive to the prospect" (10b). This latter feature is supplied in the case of Gary by the Industrial Foundation, Incorporated, alluded to previously.

But now let us briefly survey the industrial planning and zoning situation, first taking a glance at the industrial land use pattern as it existed prior to 1957 when the newly revised zoning ordinance was effected. Albert E. Dickens, Urban Economic Consultant, engaged by the Gary professional planners—Evert Kincaid Associates—evaluated the manufacturing land requirements thus:

With but one or two exceptions, the major existing manufacturing establishments, including United States Steel, have adequate land for considerable future expansion. But outside the holdings of the Gary Industrial Foundation, there is at present an insufficient amount of land zoned, serviced, and properly located for providing space for new medium-sized or large manufacturing plants. Moreover, Gary has very few vacant industrial structures. This is a serious deficiency when it is recalled that future employment expansion may be somewhat limited among Gary's existing manufacturing concerns. Therefore, to attain—to surpass, if possible—future employment goals, Gary must attract new manufacturers, preferably consumer goods plants, in order to diversify to the maximum extent possible, the city's economic make-up.

Fortunately there is an abundance of *gross* space within the city which, through appropriate reclaiming, servicing and zon-

ing, can be brought into use for manufacturing and industrial sites. The manufacturing plants here contemplated would, in general, be one-story extended type structures designed to blend well with the immediate physical environment, and they should be "nonnuisance" operationally, in order not to affect adversely any residential areas they might initially or in future adjoin. In order to achieve as much geographical dispersion as possible in the location of new industries, land should be reclaimed, serviced, and otherwise improved in the southern reaches of the city in the general area traversed by the Little Calumet River, and in the southern part of the western limb of the city. These are both population-growth sections and would orient well to localized employment sources.

To gain the employment objectives through future industrial growth and to promote its geographical dispersion, approximately 250 acres of industrial sites will be required by 1970, in addition to the tracts presently owned by the Gary Industrial Foundation. By 1980, it is estimated that 450 more acres may be needed for industrial and manufacturing uses.

Coinciding with some of these basic observations were those submitted to us in 1953 by one of Gary's enterprising engineering industrialists. It will be noted that this interviewee recognized that classifying industrial land requirements into simply two categories "light" and "heavy" is not enough. As indicated subsequently, we now have in effect five. But let us first see how this local industrialist viewed the entire planning situation:

Your questions with regards to zoning are interesting because we are suffering now because of lack of proper zoning and planning. Location of different types of unrelated industries with respect to each other are very important. This fact is often forgotten by the city planners during the natural course of city growth. It is not enough to classify an area simply as for "Light Industry" or "Heavy Industry." There are many types of light industry and all should not be located in the same area. For example, a coal yard should not be located near a watch factory even though both are light industries. We are faced with the consequences of this type of division, and it is affecting plans for expansion.

With regard to aid from local ordinances we have found that such ordinances mean little, and favor larger industries where there is a substantial economic gain to be had by the community. When such is the case some means of getting around existing ordinances seem always to be available. The cultural interests of a city are often set aside for economic gains whereas proper consideration should be given to both. Every city should have a rigid city plan which should be followed as close as possible in so far as the basic plan is concerned. In fairness to the cities, however, it is true that many times a city does not have enough to force through corrective ordinances.

The Industrial Pattern—All community planning must necessarily start with detailed inventory followed by meaningful classifications of total land use of direct functional value to the professional planner. One of the most impressive survey features of the Gary classified inventory of land use is the remarkable complexity of many of the small space units of component occupance, challenging the finest art in cartographic portrayal, as evidenced by the maps in the Kincaid offices. For our own purposes, the Gary industrial sites for the most part have been mapped and classified as shown in Figure 2. Perhaps the first industrial feature that strikes the eye of the average viewer is the extraordinary expanse of the site along Lake Michigan occupied by the U. S. Steel Corporation, and the Universal Atlas Cement Co., some of it on man-made land; next, the adjacent sizable subsidiary and other tracts oriented on the rail belt and the Grand Calumet; a third triangular area of smaller units in the center focused on antecedent rail junction, Tolleston, on the northwest, and the vicinity of Broadway on the east. Besides these there are some half-dozen more or less small plants south of the Little Calumet River and a similar number off the map to the east.

Classification-wise the site dimensions are likewise significant. Weight and bulkiness of raw materials normally demand a lot of ground space with a minimum number of storied structures. This is exhibited particularly by the sites occupied by primary metals, fabricated metals, and stone-clay (cement) plants. Thus, this is one of the distinctive land quality features that must be reckoned with in planning for any further expansion of such types of industry.

Unlike most other older heavily industrialized communities, Twentieth-century born Gary does not exhibit in its main industrial structure much regional differentiation between "relict" and modern sites. Even the more "ancient" Tolleston triangle incorporates plants belonging to one or another of the five decades of manufactural Gary. Here, however, the elements of time and space have conspired to introduce planning and zoning complications. It will be noted on the map that the industrial tracts are characteristically small, the plants diverse, and in part close-in to the business "core." Street blocks here are among the smallest in the city, and, as shown on the General Land Use map in the planners' office, the area not only features business establishments but likewise comprises both contiguous and spotty sections of residence of both the one-two family dwellings and multiple-family dwelling classifications. It is obvious that such complex geographic pattern presents a real challenge to the planner whose business in part it is to allocate properly related geographic space to satisfy all interests—residential, commercial, and industrial. As shown in Figure 2, the tracts now zoned here for industry are in the "Limited Manufacturing" category (M 1-1) with the lowest "ratio of maximum floor area" to ground space, namely, 1.5.

This sub-areal industrial classification suggests the recently-zoned refinement of the earlier alleged defective classification of only two classes—light and heavy. The present "Ordinance for the Comprehensive

Amendment of the Zoning Ordinance for the city of Gary, Indiana"¹ recognizes three main categories, instead of two: Limited Manufacturing (corresponding essentially to the former "light"); General Manufacturing; and Heavy Industry. These are designated on the sectional zoning maps as M 1, M 2, and M 3, respectively, and the nomenclature is thus transferred to our unified map (Fig. 2). Each of the first two are divided into two subcategories with respect to the "maximum floor area ratio," determined by dividing the floor area of the building or buildings by the area of the zoning lot on which they are constructed "or in the case of plan development, by the net site area." Thus the two subcategories under limited manufacturing of 1.5 and 2.4; and those under general manufacturing 3.2 and 5.0. The M.F.A. of the heavy industrial district is 5.0 (7). To realize the maximum planning advantages, specific indications of types of industries for such manufacturing districts are noted, together with the restrictive specifications including performance standards, such as apply to noise, odorous matter, vibration, toxic or noxious matter, glare or heat, fire and explosive hazards, and other possible nuisance characteristics. Following a rather common practice in the early days of planning, Gary, like other communities, prohibited industrial establishments from entering restricted residence zones, but did not prevent residences from entering areas zoned for industry. The revised ordinance now provides, however, that areas zoned for industry may not be used for residential purposes. Limited commercial use may be permitted.

Besides the regulatory restrictive horizontal and vertical space dimensions applicable to the several classifications and districts consistent with what is regarded today as sound siting and building construction, apparently due consideration has been given to the growth requirements of industries of Gary. Mr. Edmund B. Walker, vice-president of Evert Kincaid and Associates (Chicago), estimates that the present zoning provides for at least 20-25 percent increase in industrial acreage, and that the overall major planning pattern will prospectively serve the community up to around the year 1980. He also observed that while the Gary industrial zoning structure was not patterned after that of Chicago, the two do reflect a striking resemblance.

The planning enterprise of Gary thus seems to support the previously developed geographic thesis envisioning a strengthening of the industrial potential of Gary.

Acknowledgments

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¹ This brochure, consisting of 147 pages, is supplemented by a sectional atlas on land use maps and another on zoning maps. Together they outline in great detail and definiteness the provisions of the ordinance as respects "regulating and restricting the use of land and the use and location of buildings and structures; regulating and restricting the height and bulk of buildings and structures and determining the area of yards, courts and other places surrounding them; regulating and restricting the density of population." Specifically fifteen purposes are enumerated which relate to the residential, recreational, business, and manufacturing developments.

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