

Dix Report

1

PURPOSE, METHOD & BACKGROUND

Our involvement with the Grand Rapids Gypsum property taking for the I-96 Freeway and the approaches to the Grand River bridge crossing has required the time from May 21st through August 7th when the final settlement was signed. The following report constitutes a summary of the engineering analyses, cost determinations, and recommendations which have been made to the company and to the attorneys for the Highway Department of the State of Michigan.

1. PURPOSE

The purpose of these analyses and negotiations was to quash the certiorari action entered into by the company and to complete the property taking with a final settlement of all damages.

2. PROBLEM IDENTIFICATION & SOLUTION APPROACH

The primary problem and the key to the solution to the taking and final settlement has been to determine the actual corporation problems, evaluate the corporation claims, and determine the cost of the engineering solutions. The problems, in the order of their importance and as identified in certiorari action, included:

(1) Provision for wall board mill location

Prior to the proposed taking, property existed upon which a board mill could be constructed. After the taking, there was no apparent location for this proposed mill. The actual plan or necessity for the construction of this mill had to be determined. The economics of the size and location of the proposed mill had to be determined. The physical problem of finding a location for the mill with or without relocating the primary highway as planned was required. Finally, the comparison of costs between the available location before the taking and the rearrangement of company property, railroad property, and the limitation of the highway taking areas was employed to evaluate the damages associated with this mill location.

S. M. DIX & ASSOCIATES, INC.
MANUFACTURING AND MARKETING CONSULTANTS

(2) Waste disposal

Prior to the taking, the swampland area south and west of the existing mill properties provided space for disposal of waste. Subsequent to the proposed taking, this area was substantially reduced. The quantity of waste generated, the life expectancy of the continued operation, and the cost of alternative disposal was required to evaluate the damages.

(3) Liability for future damages against the company for reason of Highway secession over mined out areas and for dust generated by the mill

The area being taken for the Highway passed over mined out areas which could collapse at some time in the future causing a possible drop in the Highway road bed. Potential liability by the company after the taking introduced a legal question beyond the scope of this analysis. Conferences established that this problem was not a major barrier to the ultimate solution and settlement.

Dust from the existing operations before the proposed taking would settle in a swamp area owned by the company under normal wind conditions. After the taking, the Highway would pass through this area and open the company to either state or city action requiring them to correct the condition causing the formation of dust. The cost of this dust arresting equipment was determined in the course of our analysis. The liability of the Highway Department for this cost or any portion of this cost was resolved in conference and negotiations.

3. METHOD

Following initial conferences with the Grand Rapids Gypsum management, it was determined that the provision for a mill location was the primary problem, that this mill location was believed to be critical to the company's future, and that no actual solution was believed to be available within the property which would remain following the planned Highway taking. Investigation of the economic necessity for this mill confirmed the company's position. Subsequent activities

were focused on direct assistance to the company management and engineering departments to find a solution to the mill location, balancing the costs of Highway relocation with all other costs and methods available.

Following investigation of available consulting services on board mill construction and operation, we joined with the Grand Rapids Gypsum Company in employing the firm of Johnson & Johnson of Chicago, Illinois to send their board mill specialists for two days of conference and exploration of the problem on the grounds. These conferences with our engineering department produced the solution to this mill location problem.

Subsequent to the solution of a mill location plan, the determination of damages was based on the alternative locations of this established mill before and after the taking.

The remaining problems of waste disposal and dust control were resolved in conference after determination of costs.

4. COMPANY HISTORY & GYPSUM DEPOSIT ECONOMICS

The Grand Rapids Gypsum Company began operations before 1848, removing gypsum by a mining operation from the presently owned property. This appears to be the second oldest gypsum mine in the United States. The original gypsum was employed for agricultural purposes. Subsequently, a calcining kettle mill was added to the rock crushing and rock handling equipment and the company began to process and sell finished plaster or stucco.

The original company was primarily a real estate operation owning a large part of the west side properties of the village of Grand Rapids. Ownership has continued in the same family throughout the history of the company; however, the owners presently reside outside of the immediate area and the company has continued to be managed by employed executives.

During the company's history, additional property was acquired permitting the extension of the mining areas. The first mining engineers were employed after the turn of the century. Prior to this time large areas were opened subjecting the mines to cave-ins which have subsequently occurred. The mining engineering efforts however protected

the primary mines from these subsequent cave-ins and the remaining areas were mined with proper precautions, safety and provision for future operations.

During most of the history of the company, the very large deposits of gypsum ore were exploited with a minimum of capital expenditure and provision for the expansion of the business. An independent company was given a lease on property upon which a board mill was constructed between 1900 and 1950. This company, the mill, and its leases with the Grand Rapids Gypsum Company were purchased by the United States Gypsum Company subsequently.

During the last five years, a new professional management has taken an active stand in modernizing and projecting the future of the Grand Rapids Gypsum Company. This position was made necessary by the economic shift in the demands for products of the gypsum mine from bag plaster to plaster board. This transition has been accelerating since 1945. Since 1957, authorities on gypsum deposit economics have stated that "the day of the small independent plaster mill has passed, and the new modern gypsum board and plaster plants constructed by the integrated corporations are (taking over)". Correspondence with the Michigan State Department of Conservation and reference to their libraries confirms this information. Reference is made to an analysis of gypsum deposit economics published in the Mining Congress Journal of March 1957 by J. F. Havard.

The Grand Rapids Gypsum Company began its modernization of operations with the mining department. Several hundred thousand dollars were spent in mining equipment with the ultimate result that a department employing sixty men was reduced to a present complement of eleven men including the superintendent.

The second step in modernizing the operation involved automatic electrical controls on the No. 1 mill crushing plant, replacement of the coal-fired calciners with gas in the No. 1 plant, pneumatic conveyor from the No. 1 plant to the U. S. Gypsum board mill, and the abandonment of the No. 2 calcining mill.

Although these latter expenditures were discernible above ground, a great majority of the expenditures were internal and not obvious to the Highway Department making the original investigation and the original decision to appraise the land taken only.

S. M. DIX & ASSOCIATES, INC.
MANUFACTURING AND MARKETING CONSULTANTS

The projected plans of the Grand Rapids Gypsum Company included a board mill to be constructed after 1965. These board mill plans were not detailed. The final modernization of the calcining operation was detailed. Further, there was a question in the minds of the Grand Rapids Gypsum management as to the advisability of pushing the board mill plan ahead of the calcining plant modernization.

The gypsum deposits mined by the Grand Rapids Gypsum Company are known to extend more than two miles north of the Grand River and some five miles along the Grand River. These gypsum deposits are at two levels. The upper level consisting of a strata from eight to twelve feet thick is approximately fifteen feet below the grade level of the railroad at the mill location and has some fifty to two hundred feet of overburden above the strata in the hills under which the mines have been extended.

The lower level represents a strata some fifty feet below the upper level strata consisting of two layers somewhat narrower than the upper strata, divided by a thin strata of contaminating rock. The lower strata is believed to be as extensive as the upper strata which is confirmed by borings wherever borings have been taken.

The Grand Rapids Gypsum Company operations have been confined to the upper strata gypsum during these first 115 years of its history. The total gypsum in the lower strata exceeds the upper strata gypsum and will account for approximately a one hundred year future operation.

The Grand Rapids Gypsum Company has two competitors who have smaller holdings at the western extremity of this geological formation. The U. S. Gypsum holdings are being mined by the Grand Rapids Gypsum Company. The Certainteed Company have been operating at the westerly extremity with a more modern and larger capacity plant. This company has a much smaller land holding and has been mining on both levels.

The Grand Rapids Gypsum Company was formerly referred to as the Grand Rapids Plaster Company, and this designation is employed on many engineering drawings and other references.

SEVERANCE DAMAGE ANALYSIS

The original real estate appraisal for the land required by the I-96 Freeway was confined to the fee real estate totaling approximately 31.8 acres of unimproved property plus the use of 4.8 acres of similar, unimproved property for muck disposal. Much of this land is flooded during high water by the Grand River. The high land passed over mined out areas of the upper strata of gypsum, but the lower strata mineral rights were reserved to the Gypsum Company. The total approved appraisal is indicated at \$28,000.

Severance damages for the purpose of this analysis have been confined to those damages stipulated in the certiorari action and discussed in Chapter I. No formal before and after taking appraisal of the total industrial properties is believed to be necessary. The book value of the Grand Rapids Gypsum Corporation's net worth in a recent audit was indicated at \$1,500,000. This includes the normal understatement of raw materials in the ground. These raw materials are estimated at 11 million tons of unmined gypsum ore worth between five and ten cents per ton in the ground. Bargaining for the purchase of this industrial property would probably start at \$4 million. All of these values would be relatively unaffected by the taking if solution is found for the damages claimed by the company in their present action.

1. BOARD MILL SITE COSTS

Settlement with the Grand Rapids Gypsum Company depends on a solution to the problem of finding a site for the proposed plaster board mill within economic proximity of the company's mine and calcining operations. The cost of providing this location whether by relocating the highway or by any other means represents the principal expense in addition to the fee property taking. This expense has been considered to be the severance damages for the fee taken.

In actual practice, the cost of this board mill site is represented in the engineering expense underwritten by the Highway Department to find a solution to the problem, concessions in the area to be taken by the Highway Department for muck disposal purposes in the

planned highway construction, concessions in filling land for the benefit of the company, and a portion of the actual cash settlement at the completion of negotiations.

The necessity for providing a board mill site was not immediately apparent. The company owned the land presently leased to the United States Gypsum Company on which an adequate board mill is now operating. The leases and contracts between these two companies were withheld and could be obtained only through court action in the damage proceedings. Discussions with executives and officers of the U. S. Gypsum Company, both at the Grand Rapids location and at their offices in Chicago, indicated the following:

1. The lease was recently renewed on a ninety-nine (99) year basis and is completely separate from the operating contracts between the two companies.
2. Although the mill is relatively efficient, the building in which it is installed is very narrow and lacks proper storage area alongside the mill.
3. United States Gypsum Company holds patents on the specific mill design which permits returning the board directly under the board forming line. All other available mills require twice the width for a new installation.
4. United States Gypsum Company would remove all of their property from the mill site in the event of a lease cancellation. No admission is permitted to their mill operations and no rights have ever been permitted on the use of their patents.

This information together with the general economics affecting the small gypsum mill operators confirmed the ultimate necessity for the Grand Rapids Gypsum Company either building their own board mill or providing for the building of a board mill to the eventual purchaser of their mine and calcining properties.

(1) Board mill location size and proximity to mine and calcining mill

It was immediately apparent that a solution existed to the location of a board mill of any reasonable size in the neighborhood of the present company calcining plant. However, this location was on property not presently owned by the company, and this location would require a permanent high expense in the cost of delivering stucco from the calcining mill to the potential board mill. Further, the method of delivery would require pneumatic tubes and large volumes of air. This solution would extend experimentation presently successful in delivering stucco from the present mill to the U. S. Gypsum mill. However, this present pneumatic system is reputed to be the longest stucco delivery pneumatic tube ever attempted. Extension would involve further experimentation.

It was our opinion that this engineering problem would be resolved. However, the burden of proof in any court trial would be too difficult to attempt. Further, the existence of one hundred year's supply of gypsum in the ground would introduce an excessive cost in capitalizing the expense differential which would result from this choice of location.

As all areas available after the Highway taking were restricted, and as some concessions appeared necessary on the part of the Highway Department in giving up land presently desired, the precise dimensions of an efficient board mill became critical. These dimensions should not include any differential on the basis of efficiency if some part of the costly capitalization expense was to be avoided.

The realization of these objectives required concurrence on the part of the company with the established design of an efficient mill. The only practical solution to this problem was the employment of a second group of consulting engineers to work with the combined forces of the company and our organization in producing an agreed upon mill plan complete in outside dimensions. The Chicago firm of Johnson & Johnson was selected and the following dimensions were determined:

1. Width

The building width was finally established at 160'. A truck road on the mill side of the building (away from the railroad siding) was required with a 25' width. A service area on the railroad side of the building was established at 10'. The plant was laid out with the railroad siding inside the building (included in the 160' width). The total plot width then became 195'.

2. Building Length

The building length was governed by the length of the board mill itself which in turn is a function of the speed or capacity of the mill stated in feet per minute. Two sizes of mill speeds are available and potentially economic. The smaller, slower mill is presently planned. However, no proposal could be accepted which did not provide sufficient area for the ultimate expansion of the mill to the longer, most efficient, mill presently available. Thus, two mill lengths had to be considered:

1. An 840' mill for immediate construction.
2. A 1,140' mill site for future expansion of the original mill.

As the proposed highway described an arc around the primary Grand Rapids Gypsum properties, and the mill could only be located between the mine and the highway, the mill location became a cord across this highway arc and its ultimate expansion was limited to its original location.

3. Proximity to Calcining Mill

The ultimate, most desirable location for the proposed board mill was directly adjacent to and contiguous with the present calcining mill and the present warehouse and gypsum bagging operations of the company. This proximity would facilitate the exchange of warehouse space, the exchange of personnel between the two mill

operations, and the simultaneous loading of materials produced in the two mills. Obviously, the transportation cost between the calcining operation and the board mill operation would also be at a minimum if this solution could be realized.

Ultimately the efficiency of all board mill locations would be compared with the closest proximity mill location.

(2) Alternation location costs

Following resolution of the definition of the mill size and desired location, primary engineering efforts were expended on the analysis of alternative locations and their costs. Initially, all available Highway and company survey prints were obtained. Two Highway survey teams were employed to resolve conflicts and produce a reliable contour map of the area identifying the critical property lines. Ultimately, borings were obtained at the proposed board mill site to augment the profile lines available on the Highway prints.

Reference is made to four prints folded and attached at the end of this report. These prints provide the following significant information:

1. Print 1, Plan A

This print represents the original, company selected location for their board mill with the proposed building superimposed on the contour map identifying their present buildings and relationship to the New York Central Railroad right of way. This original plan provided for both a service and truck road which was subsequently reduced to provide a firm basis for comparison between alternative costs. The proposed building is a maximum efficiency, ultimate length board mill.

2. Print 2, Plan B

Plan B provides the proposed board plant location which is compatible with the Highway location and which became the basis for the ultimate settlement referred to as Exhibit "A". This location is also the most efficient

plant location exceeding the efficiency of the company proposed location, Plan A.

Plan B provides for the immediate mill plan as well as the future expansion, ultimate efficiency location. As drawn, the Plan B expansion is indicated in the direction from the shipping end of the plant. It should be noted that this expansion is possible in the reverse direction, wherein the shipping end of the plant would be built first and the board forming and board take-off machinery would then be relocated when the plant was expanded in a westerly direction.

Plan B contains the railroad right of way relocation identifying the curvature of the track as established by the New York Central District Engineer in the Detroit office.

3. Print 3, Plan C

Plan C represents the identical sized board mill located in a secondary position relative to plant efficiency but in a position completely compatible with the proposed I-96 right of way when the muck disposal areas originally planned are given up.

Plan C represents the minimum expenditure plant location. It also represents a minimum expense to the Highway Department in terms of the cost of altering their engineering plan. As Plan C is approximately equal in efficiency to the company's originally proposed Plan A, Plan C represents the State's defense in any ultimate damage proceedings.

Plan C is not a practical, desirable plant location in view of the availability of Plan B. Because Plan C would represent higher costs which over a one hundred year period would many times eclipse the difference in original building expense, Plan C could not be recommended to the company. Plan C was withheld from direct negotiations excepting to recognize its existence and its defensibility in any ultimate damage trial.