Air → 1995.09.08 Dust Plan Comment Response

Norlite Corporation

September 8, 1995

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Mr. Robert K. Warland, P.E.
New York State Department of
Environmental Conservation
Region 4
1150 North Westcott Road
Schenectady, New York 12306

SUBJECT: Fugitive Dust Plan Addendum - Comment Resolution

References: 1. NYS DEC letter, Warland to Klein, dated May 9, 1995
2. Norlite letter, Klein to Warland/Clarke, dated July 13, 1995

Dear Mr. Warland:

Norlite Corporation has reviewed the Department's comments on the Fugitive Dust Plan (FDP) Addendum (Ref. 1), and has reflected on conversations held during your related site visit and tour. This document constitutes our response to the formal comments contained in the reference letter and addresses the corresponding concerns expressed during your site visit. Comment resolutions are presented in two ways; first as a direct response to each numbered comment contained in the reference letter, and second, as revised pages to the FDP Addendum. To preserve the Professional Engineer's certification of the FDP Addendum, Norlite submitted and received SCI-TECH, Inc.'s approval of the revised pages (see cover letter to the enclosure). To update the Plan, please remove Sections 7 and 8 in their entirety and replace them with the enclosure to this letter.

The aforementioned enclosure has been modified to address two additional fugitive dust sources (Raw Shale Storage Silo and Finished Product Storage Silo) which were identified in Ref. 2.

Norlite's responses to numbered comments are as follows:

1. Flow charts have been supplemented with sketches and photographs to better identify and elaborate upon controlled sources and means of control. Additionally, a plan view of the site has been provided to indicate the locations of all current and proposed water sprays. Sketches and photographs of the proposed water sprays at the jaw crusher, the 12 C hopper, the Traylor Crusher, the crusher surge bin, and the clinker conveyors are included as figures in the revision to Section 8.0 of the FDP Addendum (enclosure).

Preliminary nozzle spacing was determined by calculation; however, a field test/evaluation will be required to establish final nozzle spacing, orientation, and spray timing. In general, point specific sprays for operating equipment in the primary and finishing plants will operate continuously while shale and clinker is being processed. Area sprays, i.e., Toro or Rainbird sprinklers for the kiln clinker and finishing plant product piles, operate on an intermittent timed cycle. Cycle frequency for all intermittent spray systems will be optimized to effectively control dust and avoid over watering. Once established, a table identifying the optimum cycle frequency will be submitted to the Department.

2. Norlite produces three staples, two grades of lightweight aggregate (3/4 inch and 3/8 inch) and block mix, a mixture of 3/8 inch aggregate, baghouse dust, and aggregate fines. Norlite is occasionally requested to sell lightweight aggregate fines neat; however, this is a relatively infrequent occurrence. Since both block mix and lightweight aggregate fines have a substantial fraction of fine particles, these materials must be handled with care to prevent generation of fugitive dusts.

To minimize fugitives, baghouse dust and lightweight aggregate fines are stored in enclosed silos. Historically, lightweight aggregate fines were occasionally stored outdoors; however, this practice was discontinued in June 1995. Due to its large production volume, and the need to maintain a substantial inventory for commercial sales, block mix is stored outdoors.

Block mix is produced in the finish mill and is stored nearby in a short-term production pile. Norlite's long-term block mix inventory is stored in a more remote area of the plant which is far removed from Norlite's neighbors. Current practices to minimize dust formation include frequent watering of the short-term production pile by an automatic sprinkler. The working faces of the long-term block mix storage piles face leeward, i.e., towards the southeast. Therefore, loose material is shielded from the prevailing wind. Undisturbed faces of these piles form a crust which virtually eliminates dust pickup by the wind.

Future measures to control emission of fugitive dusts from block mix production, handling, and storage include use of a radial stacker, water sprays, and storage pile contouring. Storage piles will be kept as low to the ground as possible. Piles will be oriented to present minimum working surface area to the prevailing wind. Additionally, the leading edges of piles will be smoothed to minimized air turbulence and dust pick up by the wind. Details of further dust control measures for materials containing a significant fines fraction can be found in the response to comment number 3, next.

3. Several improvements will be made to block mix conveying equipment to reduce emission of fugitive dusts. The conveyor system which transports block mix to the short-term production storage area will be modified to minimize the emission potential for fugitive dusts. the shipping belt will be lowered from its current 50 foot height to within 10 feet of grade (see Figure 8-2 of the enclosure). Additionally, a 100 foot long field conveyor with an enclosed drop chute will be installed to transport the material to an 80 foot long stacking conveyor which will be fitted with an enclosed drop chute. The head pulley height of the radial stacking conveyor will be remotely controlled within the range of 15 feet to 25 feet. Drop height will be minimized by an operating procedure which will prevent the pile from being depleted prior to restart of the stacker, i.e., product will never be dropped directly to the ground from the 15 foot minimum stacking height, it will always be dropped onto an established pile of material. Additionally, colored bars or pipe will be attached to the head pulley drop chute to help the operator determine the distance between the head pulley and the top of the pile. By this means drop height will be controlled to within the range of 12 to 18 inches.

Both a global pile spraying system and a point specific spray system will be designed for the stacking conveyor belt. The detailed design for the stacking conveyor spray system will be completed when design details of the conveyor are available.

4. Norlite has evaluated the use of fabric filtration for collection of dust laden air from open sources, e.g., drop chutes and transfer points. Although this is a proven technology with high collection efficiencies, removal and handling of collected dusts can lead to expensive and complex systems or, if not properly accomplished, could lead to more dust escaping into the air.

Norlite is more comfortable with the use of water sprays. Water spraying technology has advanced considerably in recent years due to development of a better understanding of particle dynamics and air flow. Properly designed and operated wet dust suppression systems can perform with control efficiencies which exceed 90%.

Norlite will issue a contract to a vendor with experience in wet dust suppression to install and guarantee a wet dust suppression system for the finish mill and the block mix production system. The wet dust suppression system is described in more detail in the revised Section 8.0.

Norlite

SCI-TECH has estimated the uncontrolled emission potential of dust from the transfer of block mix between conveyor belts to be 0.462 tons per year. The control method currently in use is a partially enclosed chute. With this control method, the emission potential is reduced to 0.14 tons per year, a reduction of 70%. With the addition of a 90% efficient wet dust suppression spray, potential emissions would be reduced to 0.014 tons per year.

5. The road watering schedule described in Section 7.0 of the FDP Addendum coincides with the schedules for the primary crusher plant, quarry operations, and aggregate loading operations. Should these schedules change, the road watering schedule would be changed accordingly to provide suitable coverage. Section 7.0 of the FDP Addendum (enclosure) has been revised to reflect this commitment and to include the requested road watering coverage information on a site plan.

Prior to the submission of the FDP Addendum, a stationary road watering sprinkler system was evaluated and found to be too costly, vulnerable to damage and difficult to maintain. A spare watering truck was recently purchased for a modest amount of money. Given the capital investment and other drawbacks of a stationary system, it is believed that the current truck-based road watering methodology better suits Norlite's needs.

6. Two types of wind screens have been evaluated for the eastern boundary. Only one type, a fabric screen supported by steel I-beams was determined to meet Norlite's physical needs. Although the screen material itself is not costly, the cost of the structural support system necessary to accommodate wind loading would be substantial. Additionally, this type of screen would be difficult to maintain and repair.

Norlite appreciates and will adopt your suggestion to plant evergreen trees as a barrier. This control methodology will be less costly than a fabric screen and more aesthetically pleasing. A natural wind screen will be installed by planting two staggered rows of Douglas Firs, initially 10 to 12 feet high, on 15 foot centers. Initially, the trees would provide about a 40 to 50 percent wind reduction. After a couple of years of growth, the wind speed would be reduced by 60 to 70 percent, which would be similar to the best performance that could be achieved by installation of a commercial fabric screen.

7. Norlite plans to install two wind monitoring stations since trucks are loaded in two different parts of the plant and local topography and structures could affect localized conditions. The selected locations are, 1) immediately adjacent to the eastern plant boundary, and 2) to the northwest of Gate 1. Norlite appreciates your sensitivity of financial issues and your willingness to accept a single station; however, the cost of the two systems will be modest.

8. Winter operation of the spraying systems will continue until the temperatures drop below 32° F. The new spraying systems will be equipped with automatic low point drains and air purges. These features will allow the dust suppression systems to be utilized throughout the winter any time daytime temperature climb above freezing. This will be a substantial improvement over current practices where frozen and ice-damaged systems frequently prevented operations even on relatively mild winter days.

Natural crusts of ice and snow form on inactive areas of product storage piles during the winter. These crusts prevent dust from being picked up by wind. During the winter, Norlite will maintain only one active storage pile for each size of aggregate. Inactive piles will not be unnecessarily disturbed.

9. Norlite has priced state-of-the-art drilling rigs and found them to be prohibitively expensive. We are currently investigating the feasibility of adding a more effective dust removal/suppression system to the current drill rig. In the mean time, since the quarry is located at least 1/4 mile from the nearest neighbor, and drilling operations take place 100 - 300 feet below the top level of the quarry, any dust which is not captured by the existing wet suppression system has little chance of visibly leaving the quarry.

10. Norlite has reviewed the literature and discussed dust control measures methods (applicable to blasting) with its blasting contractor. There appears to be a paucity of information on the subject, since few insights into effective preventative measures could be found. Norlite also believes that the remoteness of the quarry with respect to the property line significantly decreases the potential impact of fugitive dust on the surrounding residential area.

As an experiment, Norlite will attempt to wet the face of future blast areas to try to minimize dust. We do not believe this practice will be effective, since wetting will only affect the surface, and dust is created principally from the breaking and moving of the rock mass.

11. Norlite's union contract indirectly addresses fugitive dust control via a contract provision which empowers Norlite's management to direct the work force toward its goals. Since the Department has escalated the importance of controlling fugitive dusts, Norlite has responded by instituting studies (such as the FDP), modifying its equipment and practices, and educating its workforce regarding the importance of dust control. Norlite will continue to train its managers, supervisors and hourly employees regarding the importance of properly operating and maintaining dust suppression equipment and of diligently observing procedures to control fugitive dusts. Additionally, Norlite will establish a formal policy on dust control and will revise its disciplinary policy to address censure for violation of dust control policy.

We trust that the foregoing and the additional detail presented in the enclosures adequately respond to your comments. If you have any questions or further comments, please do not hesitate to contact me.

Sincerely,
Norlite Corporation

Edward C. Burgher

Edward C. Burgher
Director of Compliance

Enclosure

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September 5, 1995

Mr. Robert K. Warland, P.E.
New York State Department of
Environmental Conservation
Region 4
1150 North Westcott Road
Schenectady, New York 12306

Dear Mr. Warland:

SUBJECT: Norlite Response to NYSDEC Comments on FDP Addendum
SCI-TECH Project No. 95065

Accompanying this letter is the response that Norlite Corporation has prepared to address the concerns of NYSDEC regarding the Fugitive Dust Plan (FDP) Addendum for the facility in Cohoes, New York. The response addresses the concerns in two ways: in a letter with direct response to each numbered comment contained in the May 9, 1995 NYSDEC letter from R. Warland to W. Klein, and as revised Sections 7 and 8 to the FDP Addendum.

At the request of Norlite Corporation, SCI-TECH, INC. has conducted a thorough review of the concerns of NYSDEC and Norlite's response to those concerns. We have discussed the contents of Norlite's response with their staff and have suggested some additional clarifying language which they have incorporated into their submittal. Based on our review and discussions, we feel that the revised plan herein submitted by Norlite adequately responds to the comments of NYSDEC. We also feel that, based on our experience with fugitive dust control systems at a variety of industrial facilities, the revised plan presents a fugitive dust control methodology that is comprehensive in scope and maintains the fugitive dust control efficiencies discussed in the FDP Addendum while remaining within the boundaries of operational restrictions, economics, and common sense.

Sincerely,

SCI-TECH, INC.

Edward T. Brookman, P.E.
Principal Engineer

STATE OF NEW YORK · SUBRATO MITRA · LICENSED PROFESSIONAL ENGINEER · No. 58367

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Enclosures

7.0 Road Dust Suppression Plan

Vehicle traffic on unpaved roads is a significant source of fugitive dust emissions from Norlite's facility. In short, this Plan ensures that the hours of operation of the water truck at Norlite coincide with the hours of operation of heavy equipment. By defining the hours of opperation for the water truck, this Plan outlines a methodology which ensures that the facility's roads are reliably and consistently watered in dry conditions during normal operations. This Plan established requirements for all paved and unpaved roads at the plant. These roads are defined as (see map):

1. gate 1 entrance
2. quarry roads
3. west road bordering primary crusher plant
4. southern road bordering finished product storage piles
5. eastern road bordering finish plant and maintenance shop
6. northern road bordering front office and LGF tank farm (including office parking lot)

Normal operations are defined as passenger vehicle traffic during the Monday through Friday work week and traffic from one or more units of heavy equipment. Heavy equipment will include:

- Loaders (980C, 988B, 988F)
- Haul Trucks (Euclids, Autocars, dump trucks)
- LGF Fuel Trucks
- Aggregate Trucks
- Auxiliary Fuel Delivery Trucks

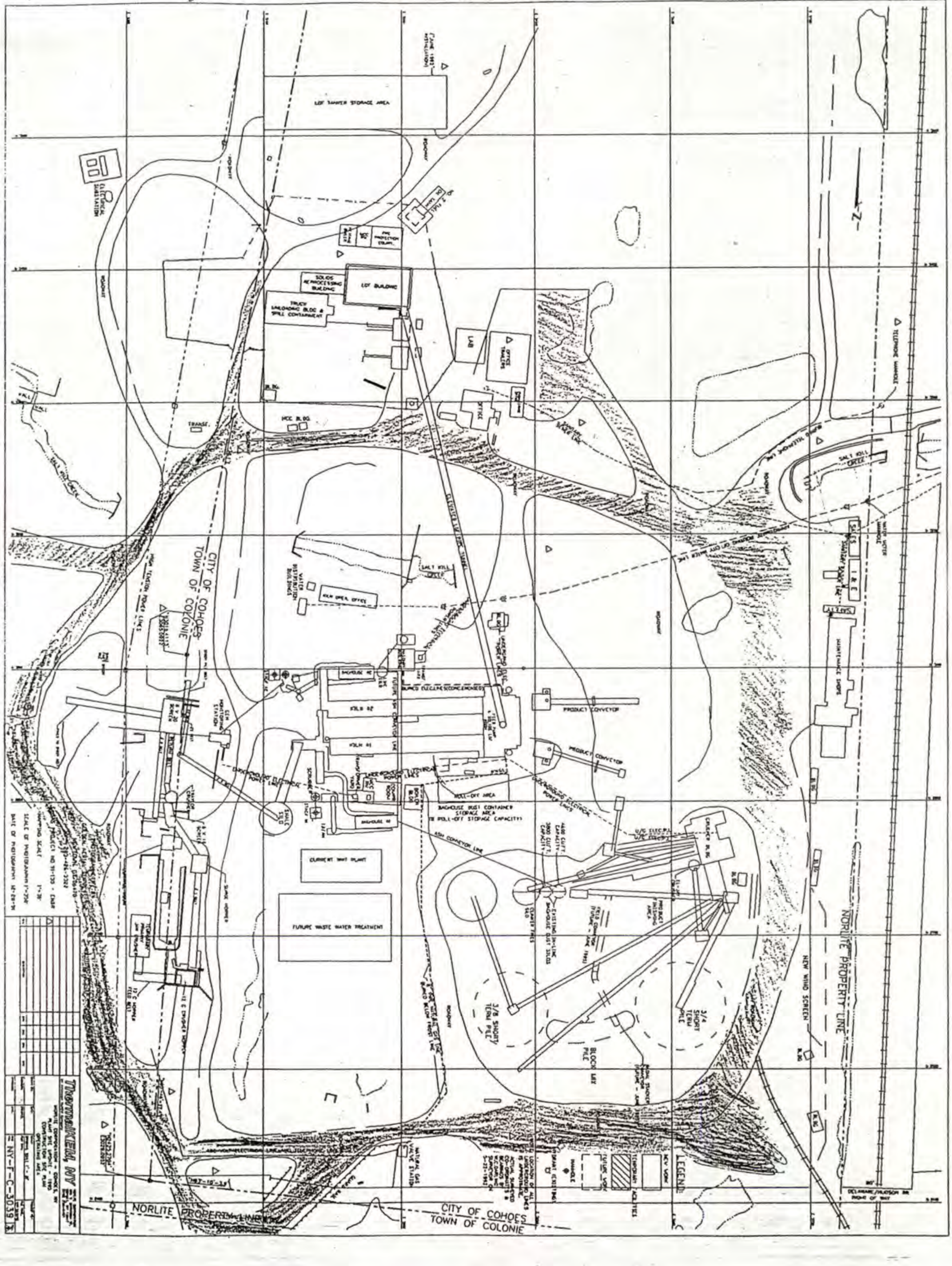
Dry conditions are defined as times when normally visible emissions can be observed by an individual when a unit of heavy equipment operating on a plant road passes by.

During normal operations in dry conditions would be expected between April 1 and November 15,Monday through Friday, from 6:00am to 6:00pm. During these times Norlite will maintain a full time operator whose primary responsibilities will be to water the roads every two hours during normal operations in dry conditions. The first application would begin at 6:30am and the last application would be at 4:30pm. If the primary crusher or quarry operations are scheduled for Saturday or Sunday then adequate manpower would be scheduled to water roads 2 and 3 every two hours.

Between November 16 and April 1 Norlite operators will be made available to water the roads if dry conditions exist and weather conditions are conducive to watering.

A typical application would be 3000 gallons of water every two hours over the 1.5 miles of roads in the plant. The application would require approximately 1.5 hours per trip and 0.5 hours to refill the truck. Specific roads requiring watering on weekends will receive an application of water in the amount necessary to eliminate normally visible emissions.

Norlite will maintain a primary and a secondary truck for road watering between April 1 and November 15. The secondary truck will be put into service in the event that maintenance must be performed on the primary unit when the roads require watering.


NORLITE PROPERTY LINE
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NEW WIND SCREEN
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8.0 SCHEDULE FOR IMPLEMENTATION

Table 8-1 presents the emission sources, the control methodologies to be implemented, and the schedule for their completion. Descriptions of the sources and the controls to be implemented are included herein. Figure 8-1 is an overall site plan drawing. Enlarged sections of the primary crusher and finish plant areas can be found on Figure 8-2, which provides greater detail and identifies emission control points. Figures 8-4 through 8-29 are photographs and sketches of the systems which are identified on the site plans and are discussed in the narrative, below. Table 8-2 provides a key to the various locations on the site plan and the corresponding Figures (photographs and sketches).

- Finish Mill Block Mix Production: Currently, block mix, a combination of bag house dust, lightweight aggregate fines, and 3/8 inch light weight aggregate, is produced using two long conveyor belts and two 40 to 50 feet high drop chutes. Norlite will install a field conveyor (Fig. 8-2, Item 1) and a radial stacking conveyor (Fig. 8-2, Item 2) to eliminate the two high drop points (Fig. 8-2, Items 3 and 4, Fig.s 8-4 through 8-6) and shorten the distance the block mix must travel on the conveyor belts. The current block mix conveyor belt (Fig. 8-2, Item 6; Fig 8-6) will be removed after the new stacking conveyor system is installed. The stacking conveyor will have a discharge chute located at the head pulley. Brightly colored bars or pipes will be attached to the chute and extend 12 to 18 inches beyond the end of the chute. The operator will control the height of the conveyor so the end of the chute will not be more than 12 to 18 inches above the top of the pile, i.e., the colored pipe will always be in or on the pile. The maximum height of the pile will be approximately 34 feet.

Norlite will employ a vendor with expertise in wet dust suppression to build, install, and guarantee a spray system to control dust emissions from the finishing plant. The spray system will control up to 90% of all dust emissions. Norlite will continue to operate the current Toro or Rainbird sprinkler systems (Fig. 8-2, Item 7; Fig.s 8-7 and 8-8) in the finishing plant area to suppress dust on and around the production piles.

- Outdoor Fines and Dust Storage: Norlite will only produce and sell light weight aggregate fines, as a stand-alone product, on special order. Currently, there are only two or three such orders a year. Norlite will not store these materials outdoors. When an order is received, fines will be conveyed from the fines storage silo to an interim transfer pile, from which it will be loaded onto a truck on the same day. Following installation of the radial stacker (Fig. 8-2, Items 1 and 2), trucks transporting lightweight aggregate fines will be loaded directly from the conveyor to eliminate intermediate transfer and handling.

Norlite does not and will not store baghouse dust outdoors. Only block mix, which contains baghouse dust as an ingredient, will be stored outside. Block mix is produced in the finish mill and is stored nearby in a short-term production pile. Norlite's long-term block mix inventory is stored in a more remote area of the plant which is far removed from Norlite's neighbors. Current practices to minimize dust formation include frequent watering of the short-term production pile by an automatic sprinkler. The working faces of the long-term block mix storage piles face leeward, i.e., towards the southeast. Therefore, loose material is shielded from the prevailing wind. Undisturbed faces of these piles form a crust which virtually eliminates dust pickup by the wind.

Storage pile contouring will be adopted as a future measure to control emission of fugitive dusts from the long-term block mix storage piles. Storage piles will be kept as low to the ground as possible and will be oriented to present minimum working surface area to the prevailing wind. Additionally, the leading edges of piles will be smoothed to minimized air turbulence and dust pick up by the wind.

- Clinker Dust to Clinker Belt: The dust collected in the clinker cooler Barron system (Fig. 8-9) that is currently transferred to the clinker pile via the clinker conveyor belt, will be transferred to an enclosed hopper. The dust will be wetted in the hopper and transferred to the clinker pile as a wet slurry. Figure 8-10 shows the skid mounted dust collector hopper.

• Windblown Dust Migrating Across Eastern Boundary: Two rows of Douglas Fir trees will be planted along the eastern boundary of the plant (see Fig. 8-2, Item 8). The trees will be placed far enough apart to allow for future growth, and will be staggered to provide a continuous wind break along the boundary. When planted, the trees will be 10 to 12 feet in height with an approximate branch span of 6 feet.

Douglas Firs were selected because they grow well in a variety of soil conditions, have a very dense foliage, and maintain foliage density as they mature. Douglas Firs were one of the three types of evergreens recommended by the Albany County Cooperative Extension Horticulture Agent.

• Finish Mill Short Term Storage Piles: Short term storage piles at the finish mill (Fig. 8-2, Item 7) are currently wetted with Toro or Rainbird type sprinklers as shown in Figures 8-7 and 8-8. These sprinkler systems will continue to be used during non-freezing weather conditions. The sprinkler on the current block mix conveyor belt will be relocated to the new radial stacking conveyor head pulley (Fig. 8-2, Item 2) to ensure that the block mix pile will continue to be sprayed with water.

• Roadways: The procedure identified in Section 7.0 of the FDP Addendum was instituted on May 1, 1995. The purpose of this procedure is to ensure that facility roadways are adequately watered to suppress dust. This procedure includes provisions to ensure that equipment and manpower are always available to water the roads when the temperature is above freezing and there is heavy vehicle traffic present in the plant. A site plan drawing, Figure 8-11 has been included to depict areas that the water truck will cover.

Other methods of wetting the roadways were examined, including the installation of a pipe and sprinkler system. These methods were determined to be more problematic and costly than use of watering trucks.

• Improved Soda Ash Silo Baghouse: The original Soda Ash Silo baghouse (Fig. 8-2, Item 14) was removed and replaced with a modern pulse-jet bin vent (Fig. 8-12) in June 1995.

• Railcar and Truck Loading: Norlite will prepare a standard operating procedure (SOP) to cover loading of trucks and railcars with block mix near the eastern plant boundary. Since the fundamental problem is the transport of wind borne dust across the eastern plant boundary, Norlite will install local wind monitoring stations near the loading areas. The SOP will be developed by observing and experimenting with loading operations over the course of a representative period. The goal will be to identify a set of acceptable practices and conditions, including wind speed and direction, during which block mix can be loaded without generating fugitive dusts which migrate across the eastern plant boundary.

Preliminary tests indicate that dust from block mix will not cross the site boundary unless operations are conducted with westerly wind speeds in excess of 10 miles per hour. Restrictions developed for this SOP will not apply to loading 3/4's or 3/8's lightweight aggregate since dust formation and migration from handling these materials is minimal.

• Drop Points, Crushers, and Screens: Wet dust suppression systems will be installed and optimized for drop points, crushers, screens, and transfer points. The finish plant wet dust suppression system will be designed and installed by a vendor chosen by Norlite. These spray systems will operate continuously while the respective conveyor belts are in operation.

The existing wet dust suppression systems for the clinker belts and the primary crusher area were designed by Norlite. Design of these systems was based on use of hollow cone spray nozzles (similar to Figure 8-25) operating at a water spray mass flow rate of 1.5% of the aggregate mass flow rate. Current literature indicates that a 0.5 to 1.5:100 (0.5% to 1.5%) water to product ratio by weight is sufficient to adequately wet the material and thereby suppress dust formation. This ratio is equivalent to about 1 gallon per ton of stone.

Each clinker belt (Fig. 8-2, Item 11) will have two spray systems. One system, a pile spray system, will operate on a 5 minute intermittent cycle to suppress dust on the clinker pile. The second system, a direct product spray, will operate continuously to wet the clinker as it falls off of the head pulley. Details of the pile spray system are provided on Figures 8-13 through 8-15. The direct product spray system will be similar to that shown on Figure 8-22a.

The primary jaw crusher (Fig. 8-2, Item 15; Fig. 8-17) will have 3 spray headers (with 3 nozzles each) located at the loading hopper. Figure 8-16 shows plan and side views of the spray headers and the hopper. Figure 8-18 is a detailed sketch of the spray header. All nine nozzles will be in continuous operation while stone is being crushed.

Figure 8-19 provides details of the spray manifold on the primary jaw crusher (Fig.8-2, Item 15) conveyor discharge. This spray system has four nozzles which operate continuously during stone crushing operations.

Stone is transferred to the 12 C hopper (Fig. 8-2, Item 16; Fig 8-21) from the primary jaw crusher via a conveyor belt. Dust is suppressed in the 12 C hopper via two spray bars (Fig. 8-20). One spray bar is centered over the top of the hopper with the spray directed downward. The second spray bar has two nozzles, one of which is directed at the stone being discharged from the conveyor belt, while the second is pointed up at a 30^{O} angle towards the center of the hopper. These sprays operate continuously while stone is being discharged from the transfer conveyor into the 12 C hopper.

Spray bars, with one nozzle each, will be attached to the discharge end of the #1 Conveyor belt at the Surge Hopper (Fig. 8-2, Item 17), and at the discharge of #2 Conveyor belt (Fig. 8-2, Item 18). These spray bars are similar in design to Figure 8-22a. A twin-nozzle spray (Fig. 8-22b) bar will be attached to the discharge conveyor at the bottom of the Traylor Crusher (Fig. 8-2, Item 19). These spray bars will operate continuously while screening and crushing stone.

- Finished Product Storage Silo: The Finished Product Storage Silo is vented through a fabric filter (sock) which is provided to remove entrained dust from air which is displaced by product (aggregate fines) during silo filling operations. In reality, displacement air and entrained (fugitive) dust bypasses the vent and escapes the silo through the rooftop fill opening. To provide a more positive means of controlling this fugitive dust source, Norlite will provide a proper filter media system.

A second source of fugitive dust was a defective drop chute on top of the silo (Fig 8-2, Item 10). The chute had several wear holes caused by abrasive scouring. During May, the chute was redesigned and repaired by replacing eroded material with an abrasion resistant metal. The repaired areas were fabricated as bolted sections which can be readily replaced for easier maintenance (Fig 8-25). Regular inspection will ensure that the chute is properly maintained.

- Raw Shale Storage Silo: The Raw Shale Storage Silo is vented through a fabric filter (sock) which is provided to remove entrained dust from air which is displaced by raw shale entering the silo. Like the Finished Product Storage Silo, displacement air and entrained (fugitive) dust bypasses the vent and escapes the silo through the fill opening (and defective panels) in the roof. To provide a more positive means of controlling this fugitive dust source, Norlite will provide a proper filter media system and replace defective roof panels.

- Shipping Tunnel Mouth: The mouth of the shipping tunnel serving both the Finished Product Storage and Baghouse Dust Storage Silos was covered with a curtain of conveyor belt strips (Fig. 8-26) to prevent dust from escaping the area (see Figure 8-2, Item 9). Under normal operations, dust is not generated in this area; however, while block mix is being produced, the level in the bag house dust silos decreases and some dust can be generated when the silos near empty. At this point the finish mill operator will stop block mix production or switch to the other dust silo.

Another potential source of dust from this area is from equipment wear. Worn vanes on the rotary airlock feeders which serve the Baghouse Dust Storage Silos can allow bypass of air and dust to the shipping tunnel. Norlite will include these rotary valves in its preventative maintenance program.

Norlite will also construct a sealed enclosure around the shipping tunnel conveyor belt. The rubber flaps have not proved as effective as thought initially. The new enclosure will seal as tightly as possible to the conveyor to minimize the open spaces that would allow dust to escape.

- Block Mix Storage by Elm Street Entrance: The area north-west of the Elm Street entrance is being used for long term storage of block mix. Norlite will prepare a standard operating procedure (SOP) which will instruct loader operators how to shape storage piles and handle these materials in a manner which minimizes generation of fugitive dusts.

- Stacking Tubes: The stacking tubes for block mix (Fig. 8-6) will be eliminated by installation of the radial stacking conveyor. Side outlets in the 3/4's stacking tube (Fig. 8-7) will be covered with rubber flaps to minimize fugitive dust emissions from this source.

- Kiln Seals: The seals at the rear of each kiln (Fig. 8-2, Item 13) will be maintained during planned kiln shutdowns as needed to prevent emissions from this area (Figs. 8-27 and 8- 28). Additionally, as part of the most recent permit modification package, Norlite agreed to install additional controls and procedures to prevent fugitive dust emissions from this source.

- Baghouse Dust Unloading Via Vacuum Truck: The current procedure of slurrying dust within the vacuum truck and then off-loading a full truck will continue. All supervisors and potential vacuum truck vendors will be trained to follow this procedure.

- Housekeeping and General Items: Pre-shift inspection checklists will be revised to include looking for missing conveyor covers and screen enclosure panels. Missing covers/panels will be replaced prior to starting the affected equipment.

- Norlite Direct Line: A mechanism to enable the public to report dust complaints, i.e., Norlite's "Direct Line", was initiated on May 1, 1995, in accordance with Section 6.0 of this report.

- Finishing Plant Operations: In the past, Norlite operated the Finishing Plant during the night shift so maintenance could be performed during the daytime when a full maintenance crew was available. To ensure better control over Finishing Plant operations, Norlite voluntarily curtailed nighttime operations. Effective January 16, 1995, the Finishing Plant began operating on a 7:30 AM to 11:30 PM, Monday through Friday schedule. Norlite has agreed to make all reasonable efforts to abide by this routine schedule; however, Norlite reserves the right to extend operations beyond these hours, or to include weekends, on those (infrequent) occasions when it is faced with unusual demand, or when routine operations have been disturbed by weather conditions or maintenance.

- Winter Operations: The water spray dust suppression systems described previously have been designed with low point drains and air purge capability. When the temperature drops below freezing, the water sprays will be turned off, drained and purged with air to displace water and prevent damage due to freezing. When the temperature rises above freezing, water spray systems will be turned on.

Natural crusts of ice and snow form on inactive areas of product storage piles during the winter. These crusts prevent dust from being picked up by wind. During the winter, Norlite will maintain only one active storage pile for each size of aggregate. Inactive piles will not be unnecessarily disturbed.

- Drilling Operations: Norlite is currently investigating the feasibility of adding a more effective dust removal/suppression system to the current drill rig. In the mean time, since the quarry is located at least 1/4 mile from the nearest neighbor, and drilling operations take place 100 - 300 feet below the top level of the quarry, any dust which is not captured by the existing wet suppression system has little chance of visibly leaving the quarry.

- Blasting Operations: Norlite has reviewed the literature and discussed dust control measures methods (applicable to blasting) with its blasting contractor. There appears to be a paucity of information on the subject, since few insights into effective preventative measures could be found. Recent quarry blasts have produced very little dust. The location and depth of the quarry should be sufficient to prevent dust from leaving the site.

As an experiment, Norlite will attempt to wet the face of future blast areas to try to minimize dust. We do not believe this practice will be effective, since wetting will only affect the surface, and dust is created principally from the breaking and moving of the rock mass.

- Disciplinary System For Dust Issues: Norlite's union contract indirectly addresses fugitive dust control via a contract provision which empowers Norlite's management to direct the work force toward its goals. Since the Department has escalated the importance of controlling fugitive dusts, Norlite has responded by instituting studies (such as the FDP), modifying its equipment and practices, and educating its work force regarding the importance of dust control. Norlite will continue to train its managers, supervisors and hourly employees regarding the importance of properly operating and maintaining dust suppression equipment and of diligently observing procedures to control fugitive dusts. Additionally, Norlite will establish a formal policy on dust control and will revise its disciplinary policy to address censure for violation of dust control policy.

Table 8-1

SCHEDULE FOR IMPLEMENTATION

EMISSION SOURCE AREA	CONTROL METHODOLOGY	COMPLETION DATE IN WEEKS FROM DEC APPROVAL OF FDP
Finish Mill Block Mix Production	Install radial stacker/conveyor to control drop height	24
Clinker Cooler Dust to Clinker Belt	Convey to a hopper	20
Windblown dust across eastern boundary	Install trees along the eastern boundary	20
Finish mill short term storage piles	Optimize current spray system	20
Roadways	Follow procedure in FDP Section 7.0	May 1, 1995
Improved baghouse on soda ash silo	Install new baghouse bin vent and remove current system	16
Railcar and truck loading	Develop operational guidelines based on meteorlogical station displays	12
Drop points, crushers, screens	Wet dust suppression systems designed and installed	20
Shipping tunnel mouth	Install enclosure over tunnel and conveyor	10
Drop Chute to Fines Silo	Install re-designed chute	Completed
Block mix storage by Elm Street entrance	Train operators on pile shaping procedure	4
Stacking Tubes	Install rubber flaps over holes in stacking tubes	10
Kiln seals	Continue maintenance	On-going maintenance item
Baghouse dust unloading via vacuum truck	Follow current unloading procedure	2
Housekeeping and general items	Replace missing conveyor covers and enclosure panels	10
Norlite Direct Line	Method of public reporting	May 1, 1995
Finish plant operation schedule	Shift to daytime operation to provide direct supervision	Completed January 16, 1995
Shale silo bin vent	Install induced draft baghouse bin vent	16
Fines silo bin vent	Install induced draft baghouse bin vent	16

Note: This schedule assumes that these improvements can be made without the need for an air permit or an air permit modification under the authority of the Order on Consent. If an air permit or modifications are required, additional time may be required to complete implementation.

Table 8-2

POINT SOURCES
FIGURES AND SITE PLAN LOCATIONS

Figure 8-2 Site Plan Item	Description	Other Corresponding Figure
1	100 ft. Long Block Mix Field Conveyor	in area Fig. 8-4
2	80 ft. Long Radial Stacking Convyor	in area Fig. 8-4
3	Current Blockmix discharge drop chute	Fig 8-6
4	Shipping Tower Drop Chute	Fig 8-5
5	Shipping Convyor Belt for block mix	Fig. 8-4
6	Block mix conveyor belt	Fig. 8-6
7	Finish Mill Short Term Storage Piles	Figs. 8-6, 8-8
7	Toro and Rainbird Sprinklers	Figs. 8-7, 8-8
8	Tree Wind Break Area	
9	Shipping Tunnel Mouth, Convyor Exit	Fig. 8-26
10	Fines Silo Drop Chute	Fig. 8-25
11	Clinker Conveyor Belt Discharge Points	Fig. 8-29
11	Clinker Belt Pile Spray	Fig. 8-13
11	Clinker Belt Pile Spray Bar Detail	Fig. 8-14
11	Clinker Belt Spray Bar Detail	Fig. 8-15
11	Clinker Belt Head Pulley Spray	Fig. 8-22a
12	Barron Dust System	Fig. 8-9
13	Rear Kiln Seals	Figs.8-27, 8-28
14	Soda Ash Silo Bin Vent	Fig.8-12
15	Jaw Crusher	Fig. 8-16
15	Jaw Crusher	Fig. 8-17
15	Jaw Crusher	Fig. 8-18
15	Jaw Crusher	Fig. 8-19
16	12 C Hopper	Fig. 8-20
16	12 C Hopper	Fig. 8-21
17	# 1 Belt Discharge into Surge Bin	Fig. 8-23
17	Spray Bar for #1 Belt Discharge	Fig. 8-22a
18	#2 Belt Discharge onto 6x16 Screen	Fig 8-23
18	Spray Bar for #2 Belt Discharge	Fig. 8-22b
19	Traylor Crusher Discharge	Fig. 8-23

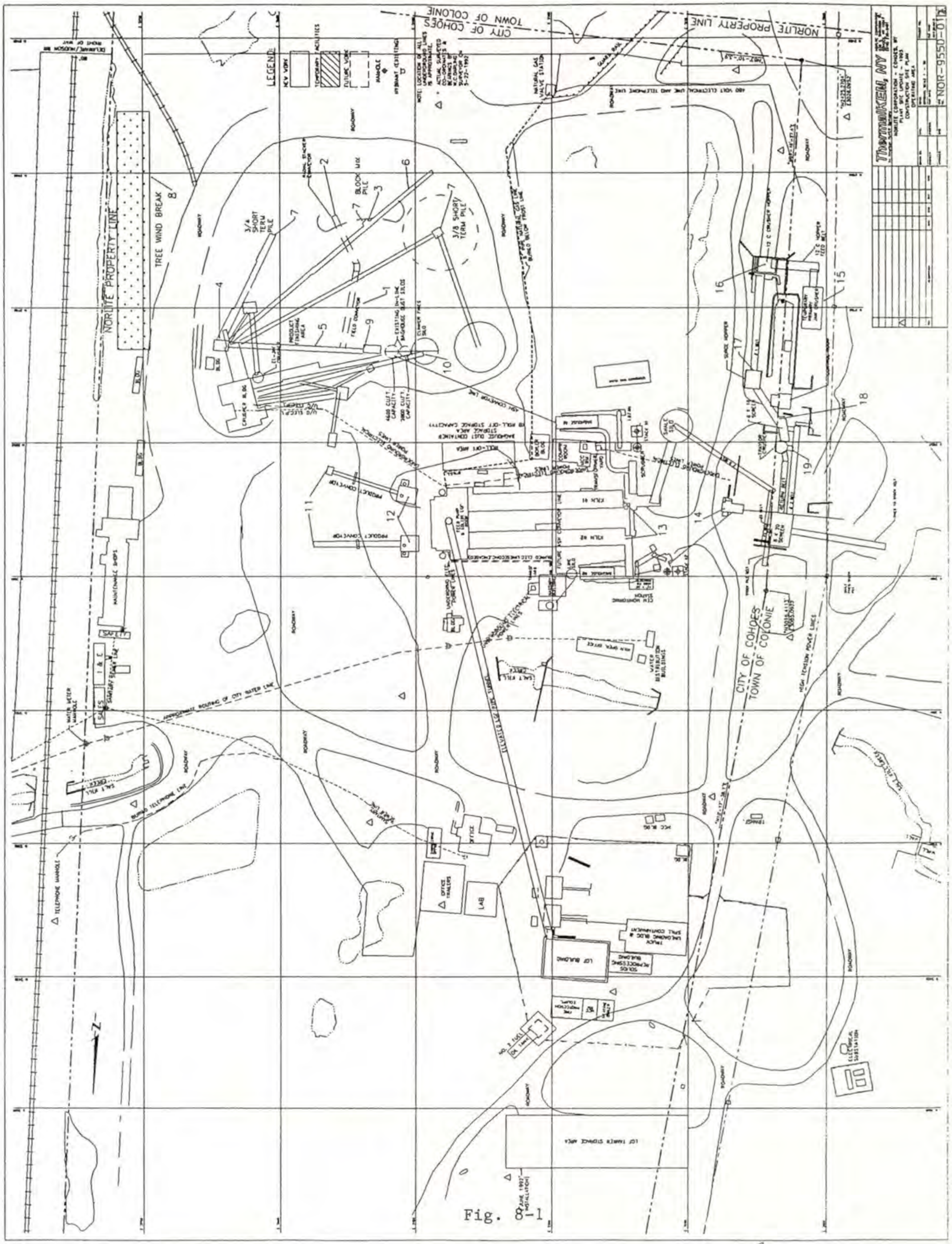

NORLITE PROPERTY LINE
TREE WIND BREAK
TOWN OF COLONIE
CITY OF COHOES
LEGEND
3/4 SHORT TERM PILE
3/8 SHORT TERM PILE
BLOCK MIX PILE
SHALE SILO
SAFETY
OFFICE
LAB
OFFICE TRAILERS
CITY OF COHOES
TOWN OF COLONIE
NOR-9550-01

Fig. 8-1

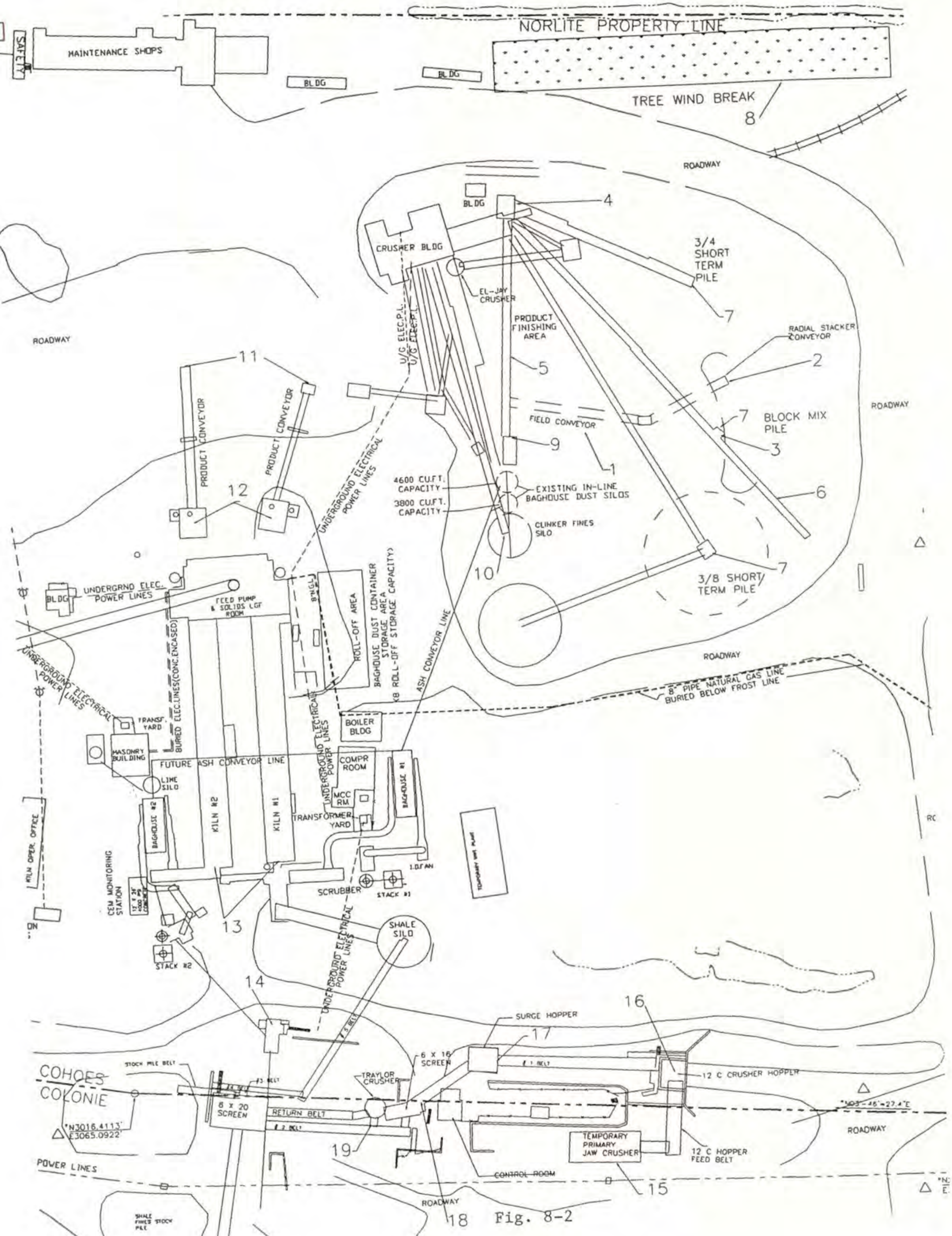

NORLITE PROPERTY LINE
MAINTENANCE SHOPS
SAFETY
BLDG
BLDG
TREE WIND BREAK
8
ROADWAY
BLDG
4
CRUSHER BLDG
3/4
SHORT
TERM
PILE
EL-JAY
CRUSHER
7
U/G ELEC.P.L.
U/G ELEC.P.L.
PRODUCT
FINISHING
AREA
RADIAL STACKER
CONVEYOR
ROADWAY
11
5
2
PRODUCT CONVEYOR
PRODUCT CONVEYOR
BLOCK MIX
PILE
7
ROADWAY
FIELD CONVEYOR
9
3
1
UNDERGROUND ELECTRICAL
POWER LINES
4600 CU.FT.
CAPACITY
EXISTING IN-LINE
BAGHOUSE DUST SILOS
6
12
3800 CU.FT.
CAPACITY
CLINKER FINES
SILO
10
7
3/8 SHORT
TERM PILE
UNDERGRND ELEC.
POWER LINES
BLDG
FEED PUMP
& SOLIDS LGF
ROOM
ROLL-OFF AREA
BAGHOUSE DUST CONTAINER
STORAGE AREA
(8 ROLL-OFF STORAGE CAPACITY)
ASH CONVEYOR LINE
ROADWAY
UNDERGROUND ELECTRICAL
POWER LINES
BURIED ELEC.LINES(CONC.ENCASED)
8" PIPE NATURAL GAS LINE
BURIED BELOW FROST LINE
TRANSF.
YARD
BOILER
BLDG
UNDERGROUND ELECTRICAL
POWER LINES
MASONRY
BUILDING
FUTURE ASH CONVEYOR LINE
COMPR
ROOM
LIME
SILO
MCC
RM
BAGHOUSE #1
KILN OPER. OFFICE
BAGHOUSE #2
KILN #2
KILN #1
TRANSFORMER
YARD
I.D.FAN
CEM MONITORING
STATION
SCRUBBER
STACK #1
13
SHALE
SILO
UNDERGROUND ELECTRICAL
POWER LINES
STACK #2
14
16
SURGE HOPPER
17
STOCK PILE BELT
6 X 16
SCREEN
#1 BELT
COHOES
COLONIE
TRAYLOR
CRUSHER
12 C CRUSHER HOPPER
6 X 20
SCREEN
RETURN BELT
#2 BELT
*N3016.4113'
E3065.0922'
19
TEMPORARY
PRIMARY
JAW CRUSHER
12 C HOPPER
FEED BELT
ROADWAY
POWER LINES
CONTROL ROOM
15
ROADWAY
SHALE
FINES STOCK
PILE
18

Fig. 8-2

Figure 8-4

The Finish Plant Area
The new block mix field conveyor will be installed in the foreground of this photograph.

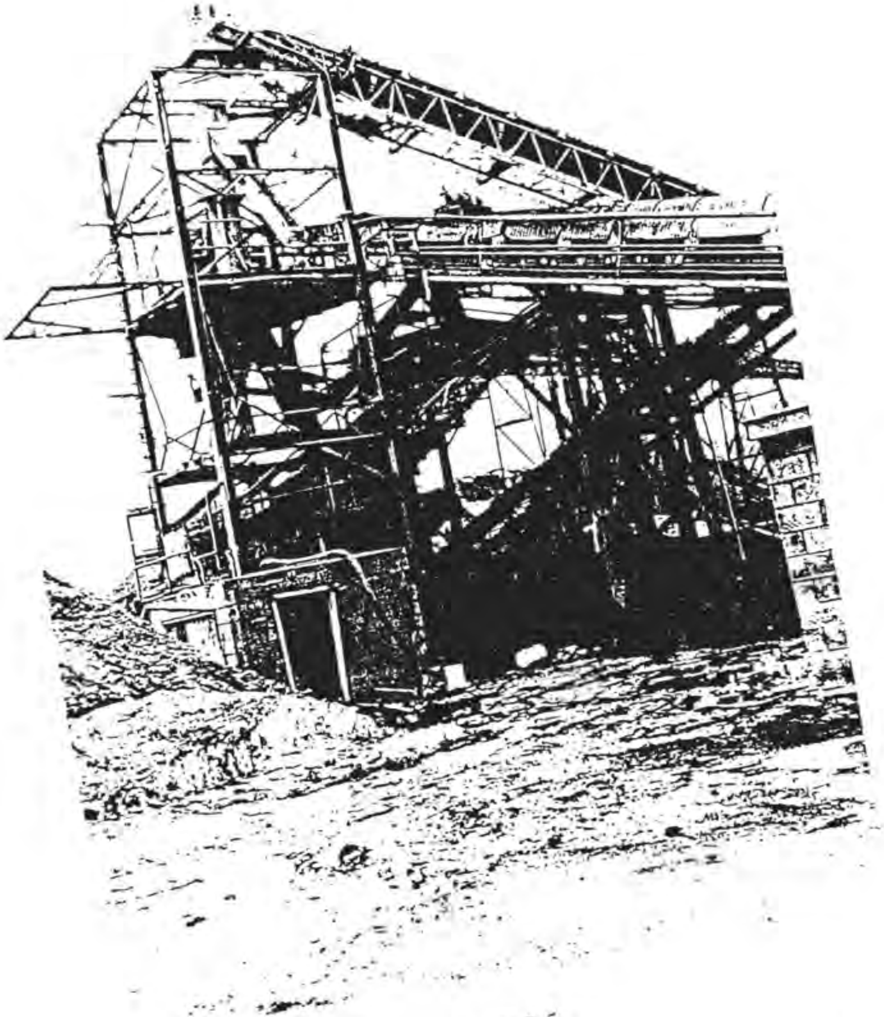


Figure 8-5
The Shipping Tower
This 40 foot high drop chute for block mix will be eliminated.

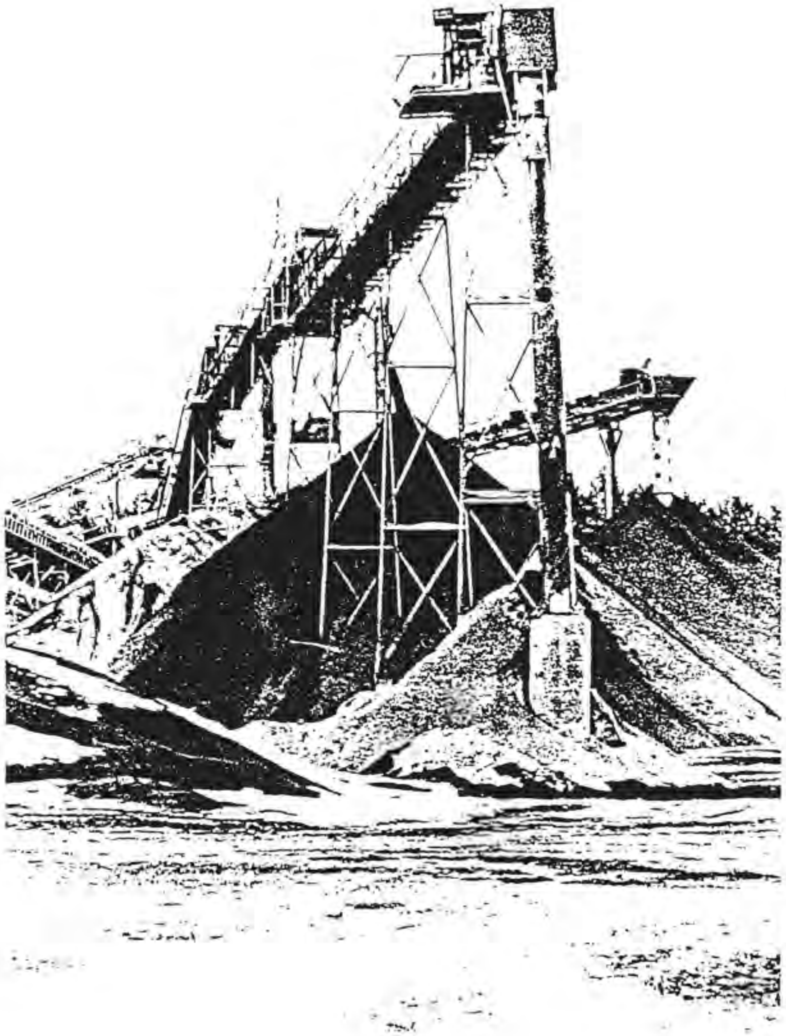


Figure 8-6

The current block mix conveyor and stacking tubes will be removed after the radial stacking conveyor is installed. The stacking tube plugs frequently and causes excessive drop heights. The radial stacker will raise and lower to control the drop height of block mix.

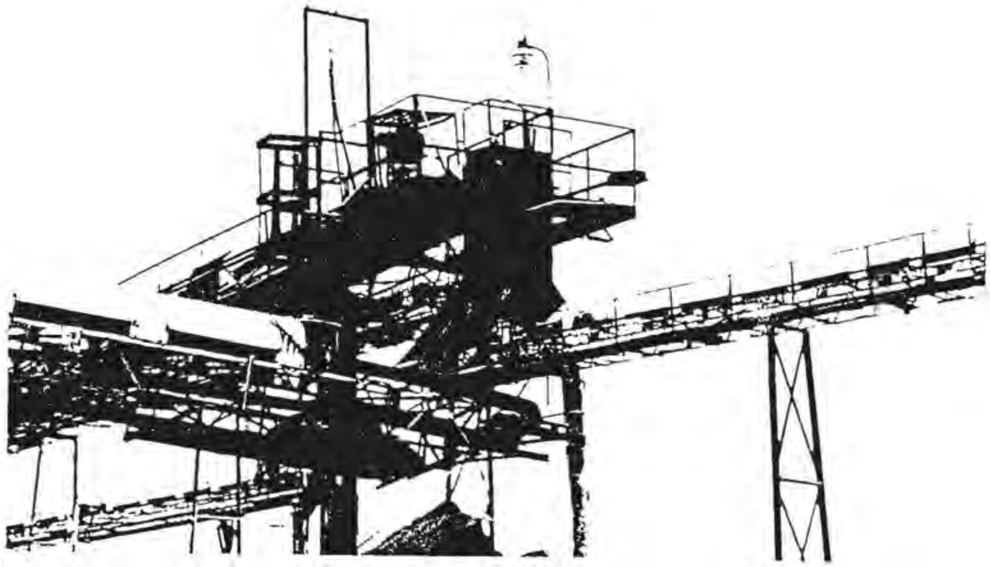


Figure 8-7

The 3/8s conveyor belt head pulley has a Rainbird sprinkler (left of the light) which waters the 3/8s pile and a small area around the pile. This sprinkler will remain in service.

Figure 8-8
The 3/4s conveyor belt and short term pile has a Toro sprinkler located next to the light at the head pulley.
The holes in the stacking tube will be partially covered with rubber flaps to reduce wind blown dust.

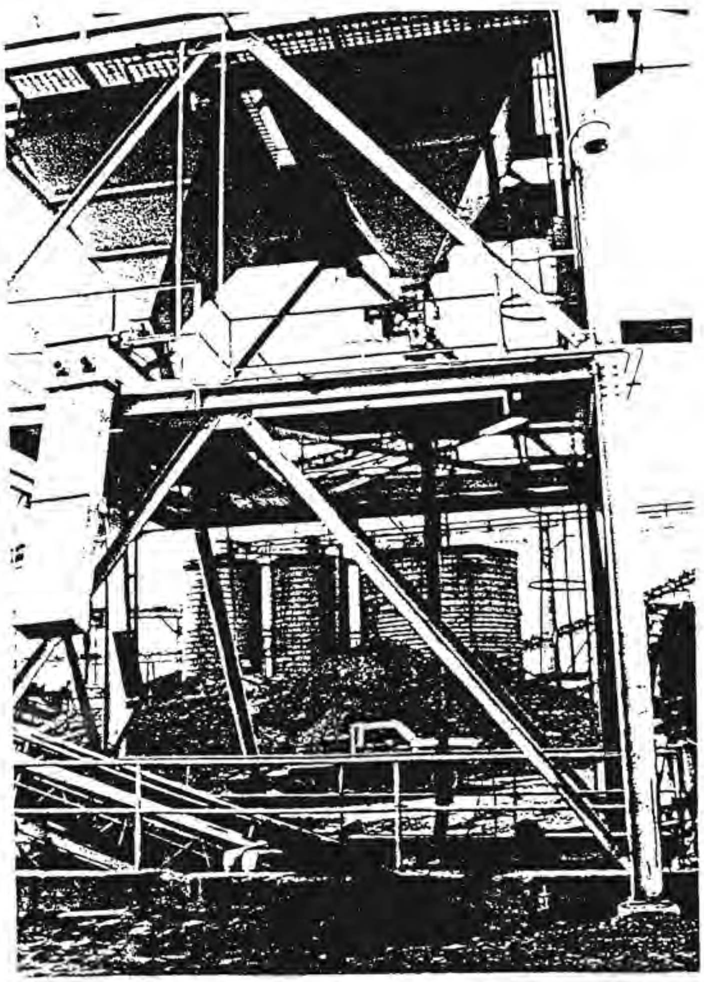


Figure 8-9

Excess air from the clinker cooler passes throught the Barron Fan system (shown). Dust is removed from the air and is transferred from the hopper on the upper right to the clinker belt via a square chute. Dust will be transferred to a hopper and later mixed into the product piles.

Clinker Dust Collector

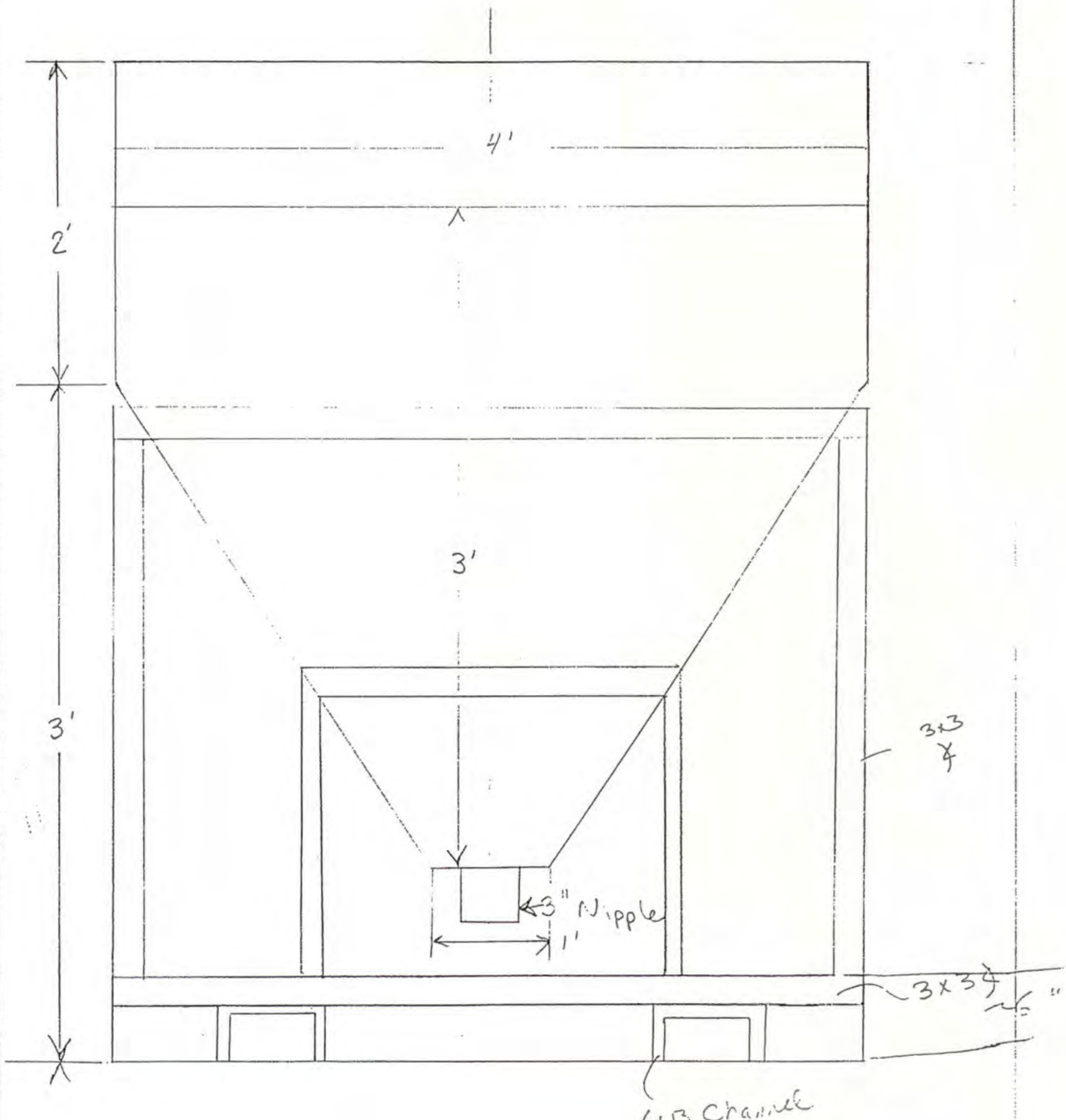
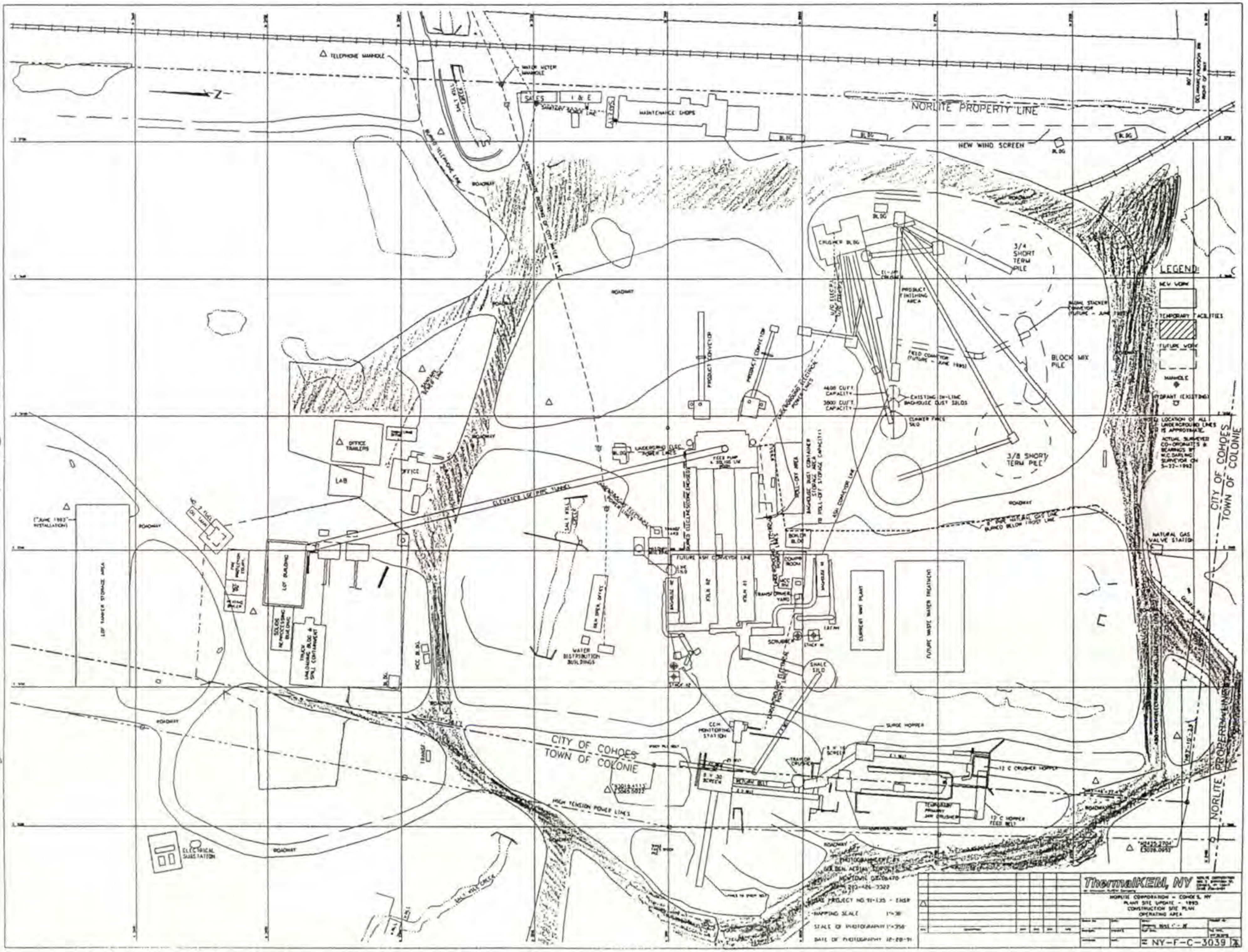


Fig 8-10


NORLITE PROPERTY LINE
NEW WIND SCREEN
TELEPHONE MANHOLE
WATER METER MANHOLE
SALES
I & E
SAFETY
MAINTENANCE SHOPS
BLDG
ROADWAY
CRUSHER BLDG
PRODUCT FINISHING AREA
3/4 SHORT TERM PILE
3/8 SHORT TERM PILE
BLOCK MIX PILE
FEED CONVEYOR
PRODUCT CONVEYOR
4600 CU.FT. CAPACITY
3000 CU.FT. CAPACITY
EXISTING IN-LINE BAGHOUSE DUST SILOS
CLINKER FINES SILO
ROLL-OFF AREA
KILN #1
KILN #2
FUTURE ASH CONVEYOR LINE
TRANSFORMER YARD
SCRUBBER
SHALE SILO
CURRENT WWT PLANT
FUTURE WASTE WATER TREATMENT
NATURAL GAS VALVE STATION
OFFICE TRAILERS
OFFICE
LAB
ELEVATED LDF PIPE TUNNEL
LDF BUILDING
SOLIDS REPROCESSING BUILDING
TRUCK UNLOADING BLDG & SPILL CONTAINMENT
LDF TANKER STORAGE AREA
WATER DISTRIBUTION BUILDINGS
MCC BLDG.
CCH MONITORING STATION
SURGE HOPPER
12 C CRUSHER HOPPER
12 C HOPPER FEED BELT
TEMPORARY PRIMARY JAW CRUSHER
CITY OF COHOES
TOWN OF COLONIE
HIGH TENSION POWER LINES
ELECTRICAL SUBSTATION
LEGEND:
NEW WORK
TEMPORARY FACILITIES
FUTURE WORK
MANHOLE
HYDRANT (EXISTING)
LOCATION OF ALL UNDERGROUND LINES IS APPROXIMATE.
PHOTOGRAMMETRY BY GOLDEN AERIAL SURVEYS NEWTOWN, CT 06470
PROJECT NO. 91-135 - ENGR
MAPPING SCALE 1"=30'
SCALE OF PHOTOGRAPHY 1"=350'
DATE OF PHOTOGRAPHY 12-28-91
ThermalKEM, NY
NORLITE CORPORATION - COHOES, NY
PLANT SITE UPDATE - 1993
CONSTRUCTION SITE PLAN
OPERATING AREA
NY-F-C-3039

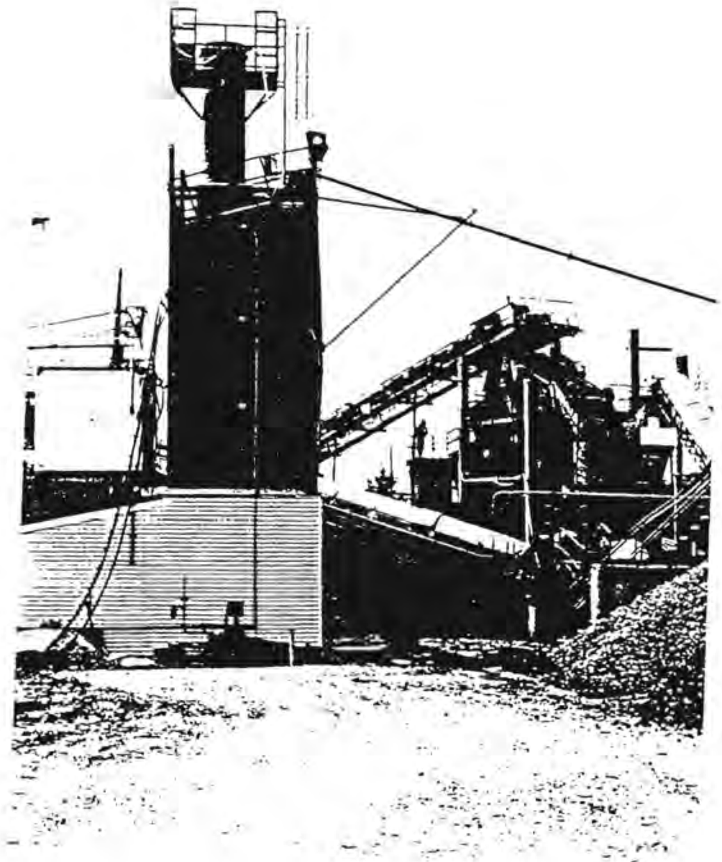


Figure 8-12

The Soda Ash Silo bin vent was replaced with a much larger Aeropulse bin vent (shown)

Clinker Belt Pile Spray System

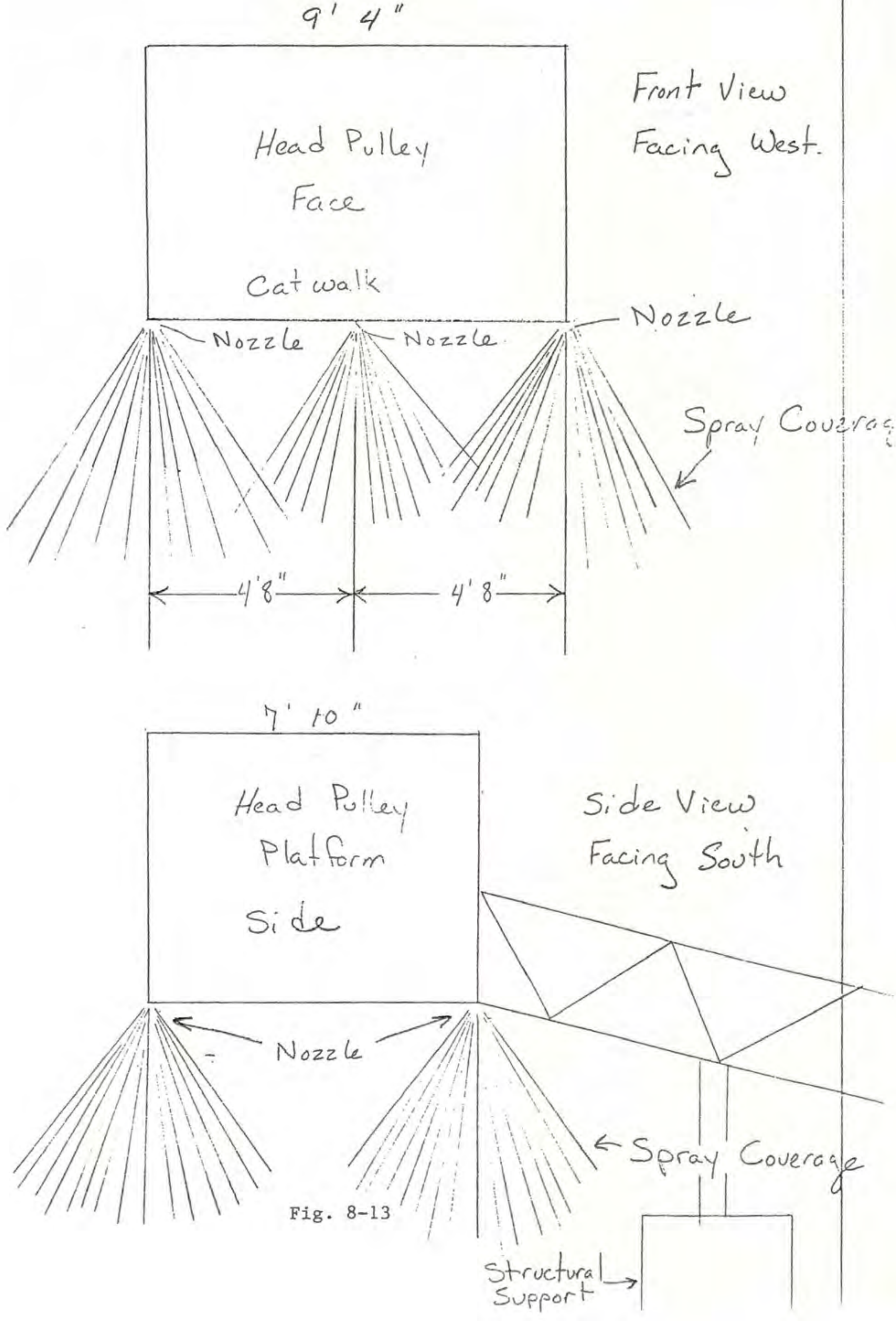
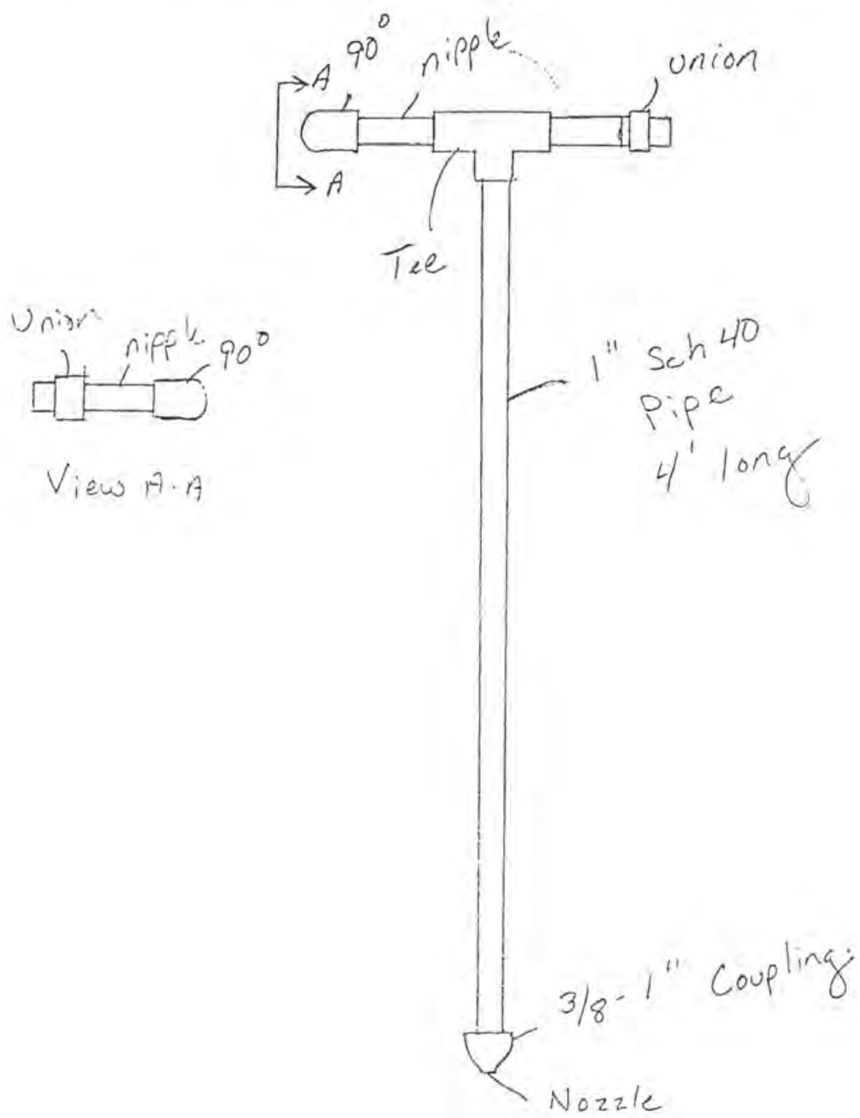


Fig. 8-13

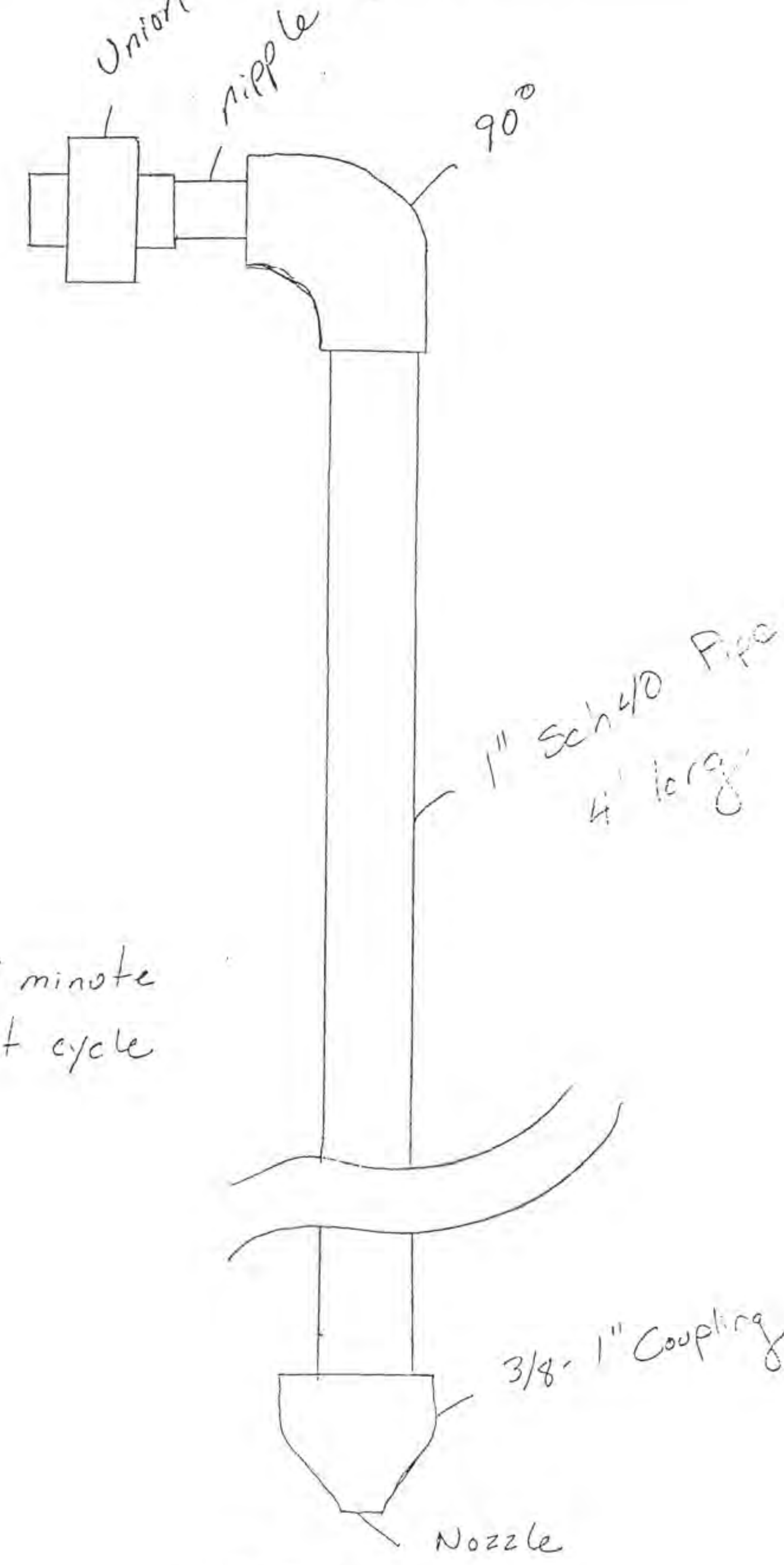
Clinker Belt Pile Spray System



Spray on a 5 minute intermittent cycle

Fig. 8-14

Clinker Belt Pile Spray System

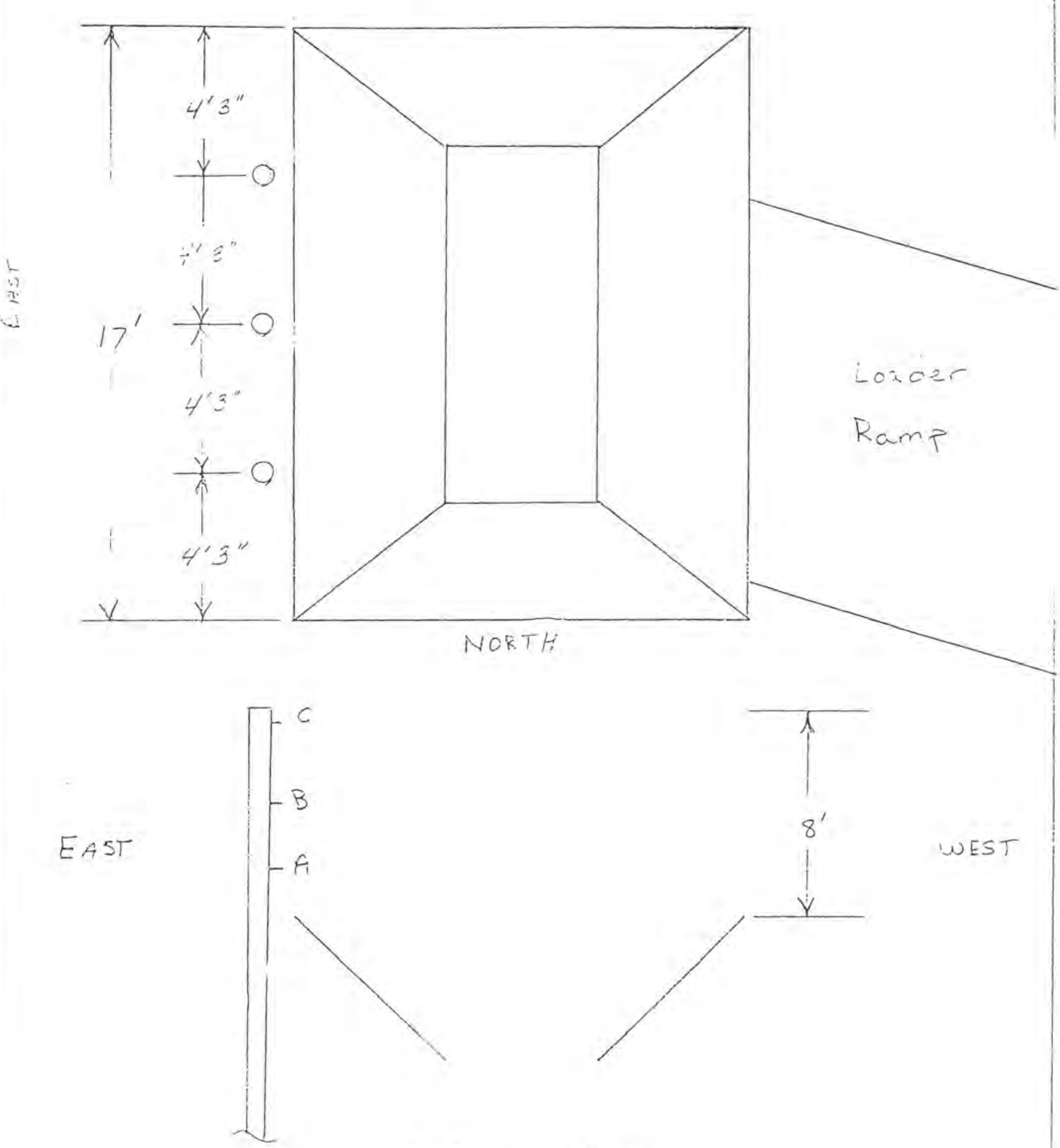


Spray on a 5 minute intermitent cycle

Fig. 8-15

Jaw Crusher Hopper

Top View



9 Spray Nozzles

Continuous operation during crushing.

Fig. 8-16

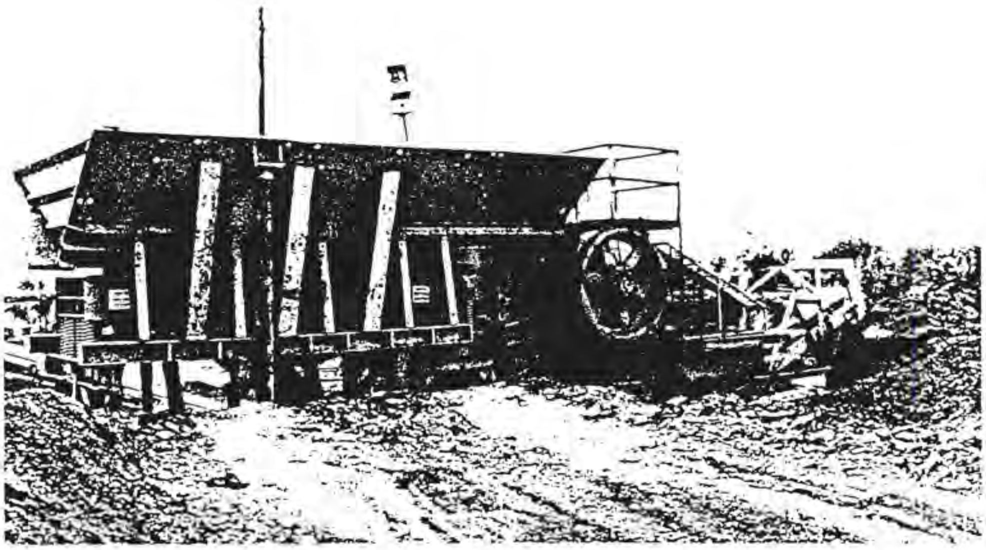


Figure 8-17
Primary Jaw Crusher and Ramp (foreground). Facing East.

Shale (Shot Rock) is dumped into the portable jaw crusher hopper by a front end loader. Crushed shale exits the crusher on the conveyor at the right. Spray bars will be installed on the east side of the crusher hopper (fig. 8-19) and at the head pulley of the discharge conveyor (fig 8-19).

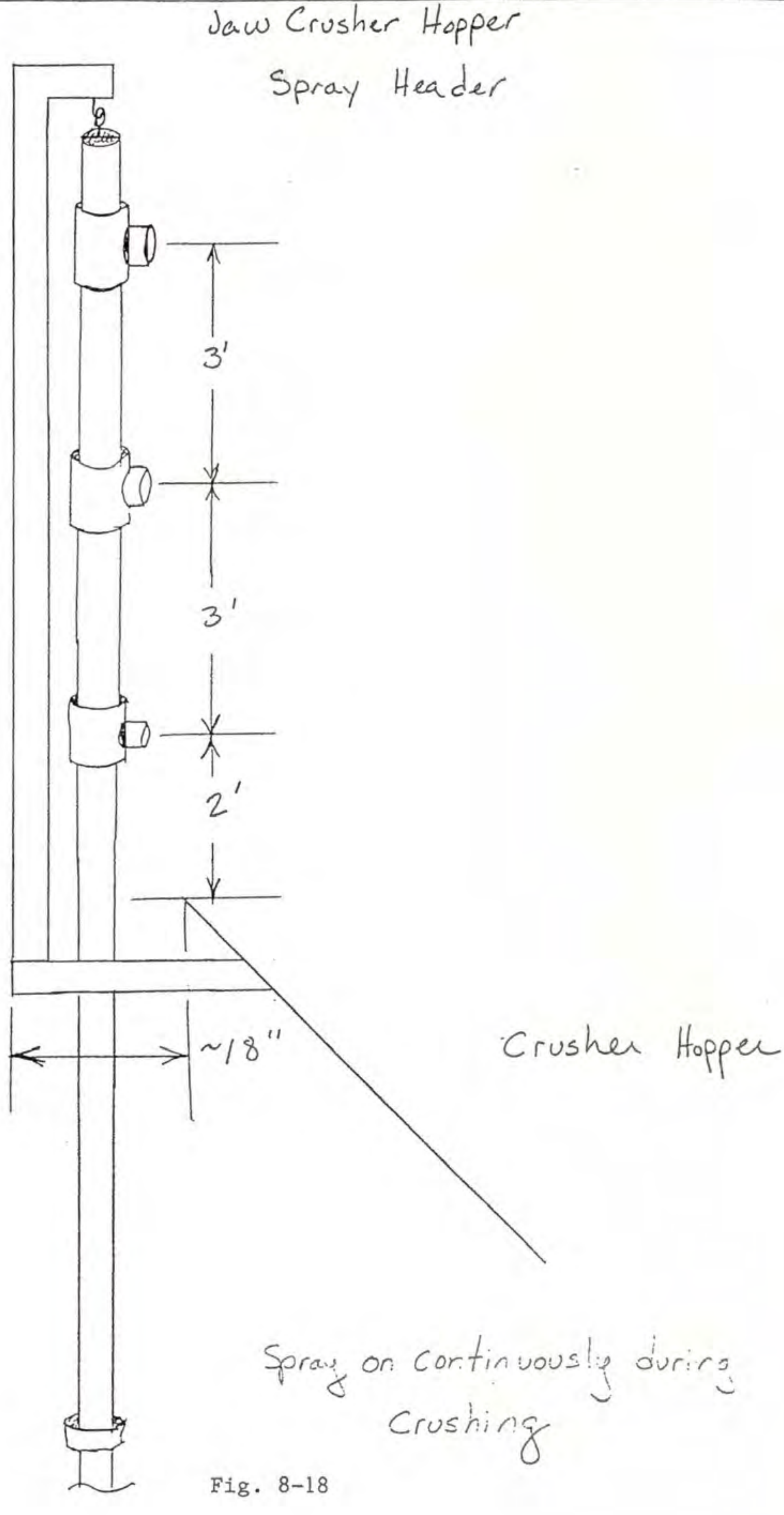
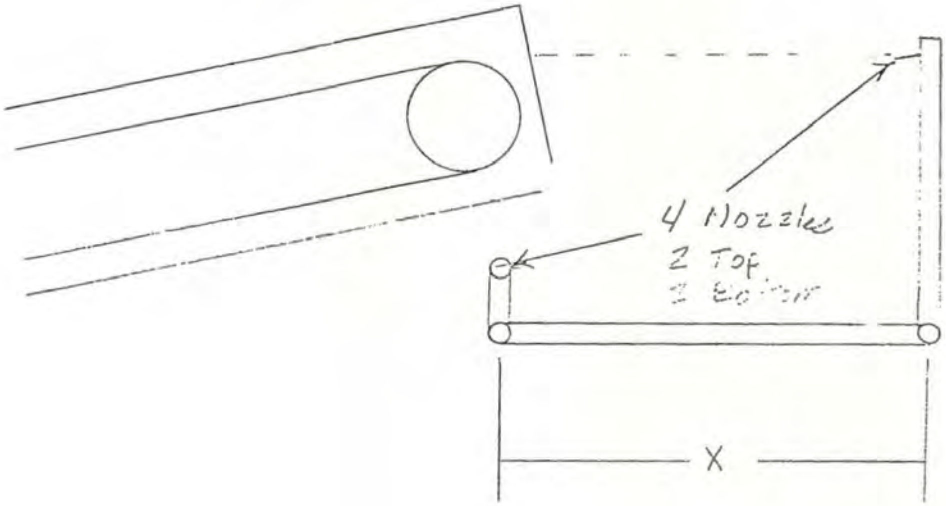
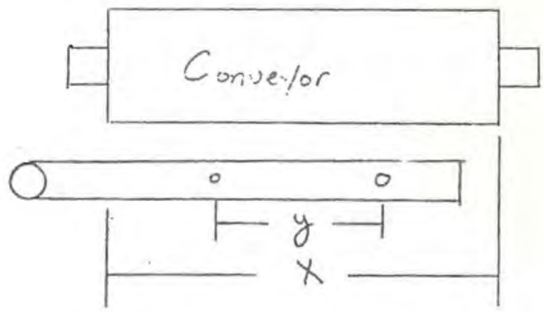

Jaw Crusher Hopper
Spray Header
3'
3'
2'
~18"
Crusher Hopper
Spray on continuously during
Crushing

Fig. 8-18

Jaw Crusher Discharge





$y = \frac{1}{3} X$

36" wide belt

$X \cong 40"$

$y = 13.33"$

$y = 1' \, 1\frac{1}{4}"$

Spacing between Nozzles = $13\frac{1}{4}"$

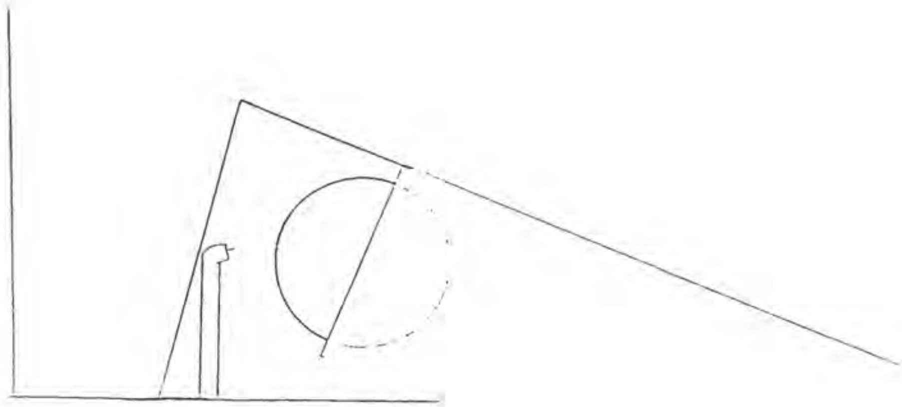
Continuous Operation During Crushing

Fig. 8-19

Figure 8-21
12 C Crusher Hopper Facing North-West.

Shale is conveyed to the 12 C Crusher Hopper from the primary jaw crusher via a transfer conveyor. One spray bar will be installed over the center of the hopper to suppress dust. Another spray bar will be installed closer to the head pulley of the transfer conveyor (fig. 8-20).

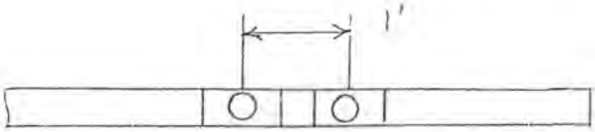
Conveyor Dischage Sprays



1 Spray Nozzle

Locations: 12 C - 1 Belt (To Surge Hopper)
12 C - 2 Belt (To 6 x 16 Screen)
Clinker Conveyor Head Pulley

Traylor Crusher Dischage



2 Nozzles Directed at Dischage under Traylor Crusher

Fig. 8-22

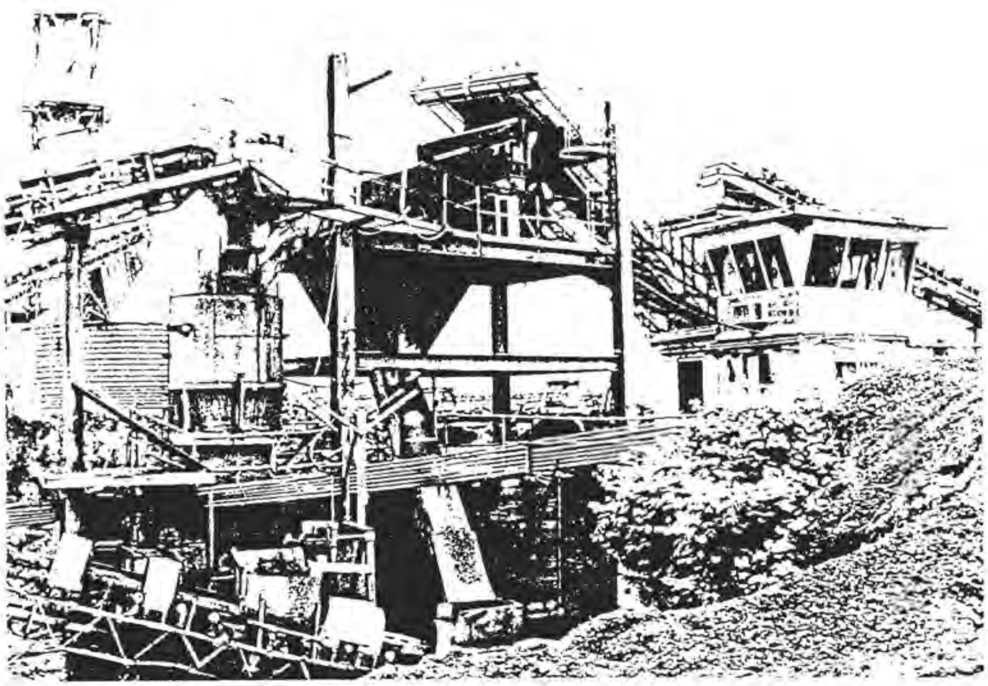


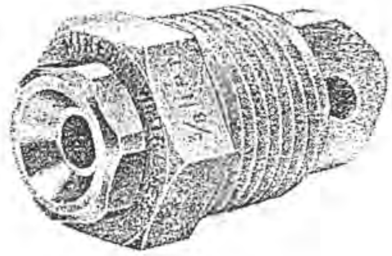
Figure 8-23
Secondary Crushing Operations

Shale from the 12 C Crusher hopper is conveyed to the surge bin (far right) and then to the 6x16 screen (center). Oversize rock is crushed in the Traylor Crusher (left). Sprays will be located at the Surge Bin, the discharge onto the 6x16 screen and the discharge from the bottom of the Traylor Crusher.

Norlite Part Specification Sheet

N	100009-Size
Name:	Nozzle, Hollow Cone

		DATE
Written By	A. Popp	4/24/95
Revised By		



Body Material: Fiberglass Reinforced Nylon

Cap Material: Brass

Pipe Size: 3/8" Male NPT

Maximum Operating Pressure: 500 psi

Vendor Spraying Systems or equivalent

Size	Orifice Diameter	GPM @ 100 psi	Spray Angle @ 100 psi	Spraying Systems Part Number
1	3/64"	0.25	52	3/8 BDM-2-0.5
2	1/16"	0.36	65	3/8 BDM-2-1
3	5/64"	0.63	69	3/8 BDM-2
4	5/64"	0.69	68	3/8 BDM-3-2
5	3/32"	0.94	75	3/8 BDM-3
6	1/8"	1.6	78	3/8 BDM-5
7	5/64"	1.1	46	3/8 BDM-10-2
8	11/64"	4.3	60	3/8 BDM-20-10

F2 2-24

Figure 8-25
Finish Plant Fines Silo and Fines Chute

The West face of the fines silo chute (shown) has been redesigned with easily changed, wear resistant plates (also shown).

Figure 8-26
Shipping Tunnel Mouth Enclosure

The Shipping conveyor belt (right) extends under the three silos (left, not shown). The enclosure covering the mouth of the tunnel will be improved and sealed.

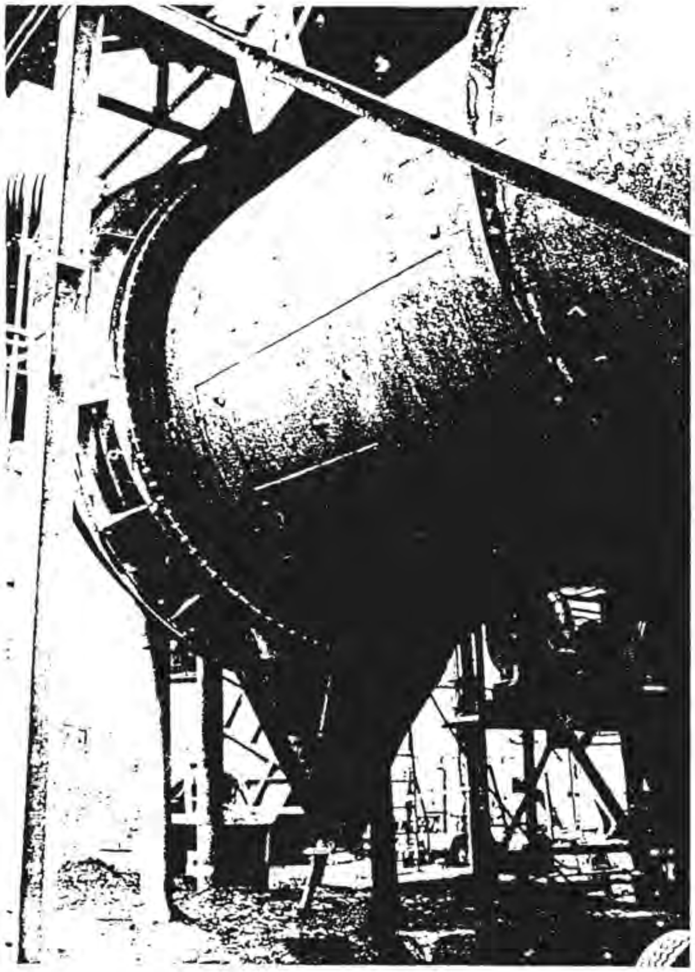


Figure 8-27
Rear Kiln Seals

The seal mechanism and knock out box will be maintained during all planned shutdowns.