F&A Receipt # 758157
Sep 23 2011

RECEIVED
SEP 30 2011
DIVISION OF AIR RESOURCE MANAGEMENT

# CONCRETE BATCHING PLANTS
# AIR GENERAL PERMIT RE-REGISTRATION INFORMATION

**Facility Identification Number - If known** (seven digit number)

**7775362-001-AG: September 2011 re-registration for this permit, which will expire 10/26/2011. Currently classified "Inactive".**
**NOTE: The Authorized Representative below requests this facility be classified as Long Term Reserve Shutdown ("LTRS)" status, effective September 2011, not "Inactive".**

7775362-002

**Registration Type**

Check one:

**INITIAL REGISTRATION** - Notification of intent to:

- ☐ Construct and operate a proposed new facility.
- ☐ Operate an existing permitted facility not currently using an air general permit (e.g., a facility proposing to go from an air operation permit to an air general permit). If the facility currently holds one or more air operation permits, such permit(s) must be surrendered by the owner or operator upon the effective date of this air general permit. (See "Surrender of Existing Air Operation Permit(s)" below.)
- ☐ Operates an existing facility not currently permitted or using an air general permit.

**RE-REGISTRATION** (for facilities currently using an air general permit) - Notification of intent to:

- ☒ Continue operating the facility after expiration of the current term of air general permit use.
- ☐ Continue operating the facility after a change of ownership.
- ☐ Make an equipment change requiring re-registration pursuant to Rule 62-210.310(2)(e), F.A.C.
- ☐ Any other change not considered an administrative correction under Rule 62-210.310(2)(d), F.A.C.

**Surrender of Existing Air Operation Permit(s) - For Initial Registrations Only, if Applicable**

All existing air operation permits for this facility are hereby surrendered upon the effective date of this air general permit; specifically permit number(s):

_____

**General Facility Information**

Facility Owner/Company Name (Name of corporation, agency, or individual owner who or which owns, leases, operates, controls, or supervises the facility.)
**Hayward Baker, Inc.**

Site Name (Name, if any, of the facility site; e.g., Plant A, Metropolis Plant, etc. If more than one facility is owned, a complete registration must be submitted for each.)

**Mobile Concrete Mixer & Cement Silo**

**(7775362 - Stored at Hayward Baker headquarters, 6850 Benjamin Rd., Tampa, FL 33634 unless mobilized to job sites.)**

Facility Location (Physical location of the facility, not necessarily the mailing address.)
Street Address: **6850 Benjamin Road**
City: **Tampa** County: **Hillsborough** Zip Code: **33634** −4416

Facility Start-Up Date (Estimated start-up date of proposed **new** facility.)(N/A for existing facility.)
**N/A**

**Facility Contact**

Name and Position Title (Plant manager or person to be contacted regarding day-to-day operations at the facility.)
Print Name and Title: **Mr. Dean Elliott, Operations Manager**

**NOTE: The above Authorized Representative requests this facility be classified as Long Term Reserve Shutdown ("LTRS)" status, effective September 2011, not "Inactive".**

Facility ID No. **7775338 (Concrete Batching Plant AG Permit)**

Facility Contact Telephone Numbers
Telephone: **(813) 884-3441** Fax: **(813) 884-3820**
Cell phone: **(813) 299-3413**
E-mail: **DAElliott@haywardbaker.com**

Facility Contact Mailing Address
Organization/Firm: **Hayward Baker, Inc.**
Mailing Address: **6850 Benjamin Road**
City: **Tampa** County: Hillsborough Zip Code: **33634**

**Other Contact/Representative (to serve as additional Department contact)**

Name and Position Title
Print Name and Title: **Mr. Lynn Robinson, P.E., Permitting Manager**

Other Contact/Representative Telephone Numbers
Telephone: **(813) 752-5014** Fax: **(813) 752-2475**
Cell phone: **(813) 957-8804**
E-mail: **lrobinson@sesfla.com**

Other Contact/Representative Mailing Address
Organization/Firm: **Southern Environmental Sciences, Inc.**
Street Address: **1204 North Wheeler Street**
City: **Plant City** County: **FL** Zip Code: **33563**

**7775338 (Concrete Batching Plant AG Permit)**

**Type of Facility**

Check one:

☐ **Stationary Facility** ☒ **Relocatable Facility**

**Type(s) of Reasonable Precautions Used to Prevent Unconfined Emissions**

Check all precautions to be used for the management of roads, parking areas, stock piles and yards:

| | | |
|---|---|---|
| ☐ **Pave Roads** | ☐ **Pave Parking Areas** | ☐ **Pave Yards** |
| ☐ **Maintain Roads/Parking/Yards** | ☐ **Use Water Application** | ☐ **Use Dust Suppressant** |
| ☐ **Remove Particulate Matter** | ☐ **Reduce Stock Pile Height** | ☐ **Install Wind Breaks** |

Check all precautions to be used for the management of drop points to trucks:

| | | |
|---|---|---|
| ☐ **Spray Bar** | ☐ **Chute** | ☐ **Enclosure** |
| | ☐ **Partial enclosure** | |

**Equipment Details** Provide information for each silo, weigh hopper (batcher), and other enclosed storage and conveying equipment that are limited to a visible emissions of 5 percent opacity pursuant to Rule 62-296.414(1), F.A.C.

| PROCESS EQUIPMENT TYPE (silo, weigh hopper, batcher, etc.) | PROCESS EQUIPMENT IDENTIFICATION* | CONTROL DEVICE (baghouse, vent filter, etc.) | CONTROL DEVICE MANUFACTURER | CONTROL DEVICE MODEL NUMBER |
|---|---|---|---|---|
| **Paddle Assisted Colloidal Grout Mixer** | **Model Colmixer CP6000** | **N/A** | **N/A** | **N/A** |
| **Cement Silo** | **Belgrade Steel Tank Co.** | **Baghouse** | **Belgrade Steel Tank Co.** | **"Belle" 150** |

* If there are multiple pieces of the same types of process equipment (more than one silo, etc), provide an identifier (location, numeric designation, capacity or product) specific to each piece of equipment.

**Description of Facility**

Below, or as an attachment to this form, provide a description of the concrete batching plant operations at the facility in sufficient detail to demonstrate the facility's eligibility for use of this air general permit and to provide a basis for tracking any future equipment or process changes at the facility. Describe type of concrete product(s) manufactured, all air pollutant-emitting processes, and identify any air pollution control measures used. Mobile source equipment information is not needed (eg.: trucks, bulldozers, front-end loaders, etc.)

**This September 2011 re-registration is for the renewal of Permit No. 7775362-001-AG (expiration date: 10/26/2011) for Hayward Baker, Inc.**

**The facility is a relocatable/mobile concrete mixer and associated cement storage silo to produce concrete at job sites for specific on-site needs. The Belgrade Seel Tank Company, cement storage silo is equipped with a Belgrade silo-top baghouse.**

**Cement is loaded into the storage silo pneumatically through a hose from a bulk delivery tanker truck. The baghouse controls particulate matter (dust) emissions associated with the air displaced from the silo during loading of cement into the silo.**

**From the silo, cement is loaded to the weigh batcher by a screw auger. This sytem is closed and does not generate dust.**

**The correct weight of cement is then fed from the weigh batcher to the mixer, which contains water, then thoroughly mixed and removed for use at the job site.**

**See attached equipment information.**

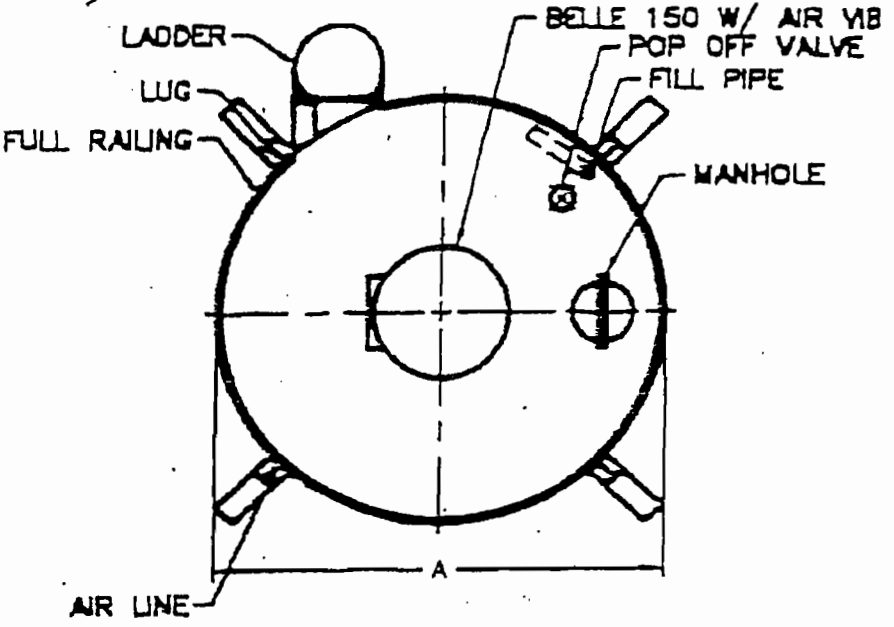
# EQUIPMENT INFORMATION ATTACHMENT

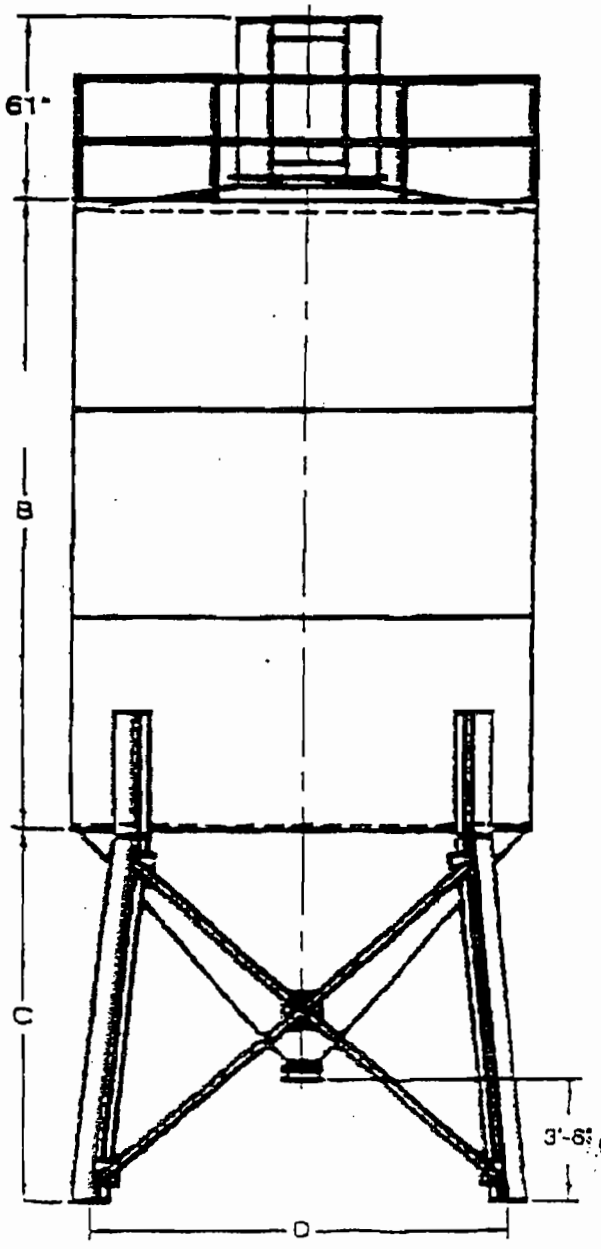
BELGRADE STEEL TANK
405 Lowery Ave. • Box 66
Belgrade, Minnesota 56312
Phone: (320) 254-8246 • FAX: (320) 254-3458

34 Years

Attn: Daryl

KEEP FOR FILE (SILOS)




# Belgrade Basic Silos:

## Standard Equipment

- Legs w/3'6" clearance under discharge
- Outside Ladder w/Cage Opt. inside ladder
- Full railing
- 4" Blower pipe w/adapter Optional 5" Blower pipe
- 150 Sq. Ft. Dust House w/air vibrator & pop-off valve Optional 225 Sq. Ft.
- Vibrator Air Line
- Man hole
- 8 External Air Pads
- Standard Jam Gates
- Sand Blast, Prime and Painted Standard Colors white-grey-tan-cat yellow

| Brrl | A | B | C | D | Wt. |
|---|---|---|---|---|---|
| 225 | 8'6" | 15'0" | 8'6" | 7'8" | 6000# |
| 300 | 8'6" | 20'0" | 8'6" | 7'8" | 7000# |
| 350 | 10'0" | 18'0" | 9'6" | 9'4" | 9000# |
| 450 | 10'8" | 18'0" | 9'10" | 9'10" | 10000# |
| 550 | 10'8" | 24'0" | 9'10" | 9'10" | 13000# |
| 700 | 12'0" | 24'0" | 10'6" | 11'0" | 15000# |
| 900 | 12'0" | 30'0" | 10'6" | 11'0" | 17000# |
| 1050 | 12'0" | 36'0" | 10'8" | 11'0" | 21000# |



Jess Thompson 320-254-8246

## SECTION 1: GENERAL FACILITY INFORMATION

Does the facility have a current air quality permit? [ Yes / No ]; If Yes, permit number _____

Facility Rated Capacity [cubic yards per hour] _____ (not to exceed 326 $yd^3/hr$)

Does the facility operate non-exempt air emission sources outside of the concrete batch plant as defined in the instructions? (see 15A NCAC 2Q .0102 for list of exempt activities) [ Yes / No ] If the facility does operate any non-exempt activities please contact your Air Quality Regional Office.

## SECTION 2: CONTROL DEVICE PARAMETERS

| | Controlled Sources | | |
|---|---|---|---|
| Fabric Filter Parameters | Cement Silo | Flyash Silo | Weigh Hopper |
| Manufacturer | Belgrade | | |
| Square Feet of Filter Area | 150.5 sq ft. | | |
| Estimated Inlet Flow Rate (ACFM) | 375 C.F.M | | |
| Filter Material | PE 37 100% Polyester | | |
| Cleaning Procedure: (mechanical, reverse flow, air pulse, bag collapse, or other (describe)) | Vibrator | | |

## SECTION 3: OTHER AIR EMISSION REDUCTION ACTIVITIES

Does the facility operate any air emission controls not specified above? [Yes / No] If so, please specify the emission source and the control device(s). _____

Describe any additional air pollution activities taking place at the facility which have not already been adressed:

_____

_____

_____

This application must include the attached "Specific Emission Source Reduction and Recycling" form as required pursuant to North Carolina General Statute 143-215.108(g).

The permitee should request renewel of the permit at least ninety (90) days prior to its expiration. Operation of the facility without a valid air permit could result in enforcement action pursuant to NCGS 143-215.108.

_____

I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete, and accurate.

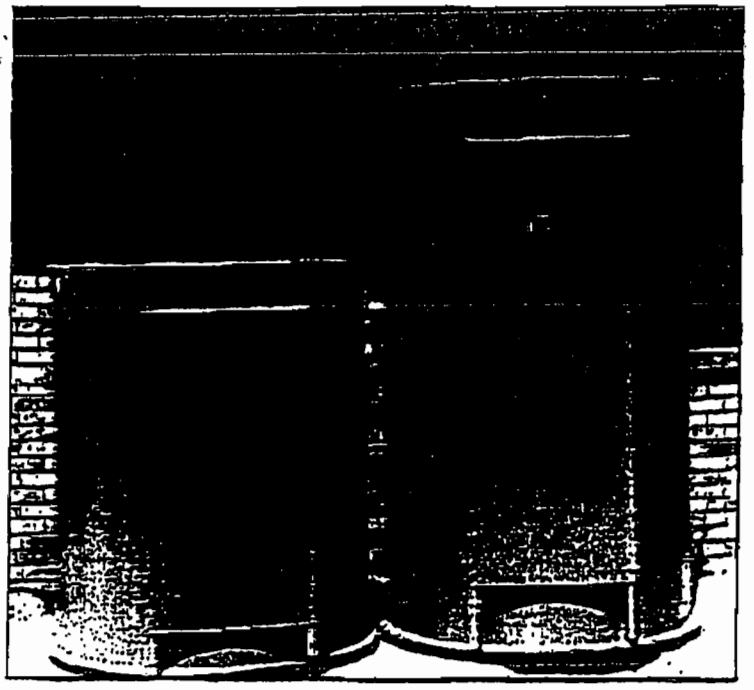
Printed Name of Responsible Company Official _____

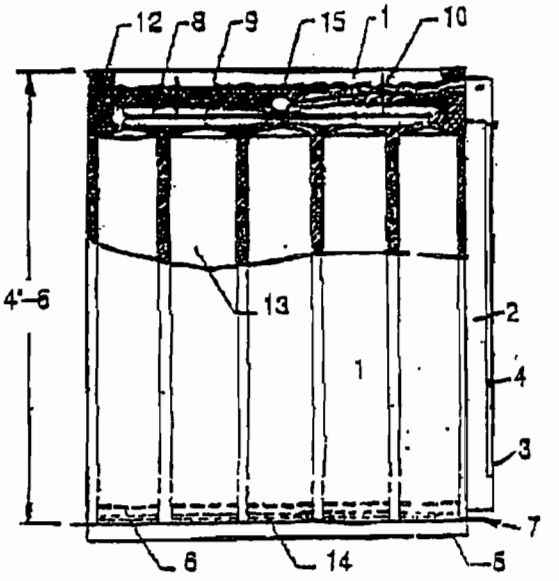
Title _____

Date Application Signed _____

Signature of Applicant _____

# "Belle" Style Dust House






| SQUARE FT. BAG AREA | CAP. CEMENT |
|---|---|
| 150 | 375 C.F.M. |
| 225 | 675 C.F.M. |

| Parts List | 150 Sq. Ft. | 225 Sq. Ft. |
|---|---|---|
| 1. Housing | 4'8" x 10' x 14 Ga. | 6'6" x 10' x 14 Ga. |
| 2. Door Frame | 4'4" x 4 1/2" x 12 Ga. | 6'4" x 4 1/2" x 12 Ga. |
| 3. Door Frame Screw (2) | 21" x 4 3/4" x 12 Ga. | same |
| 4. Door | 42" x 24" x 14 Ga. | 60" x 24" x 14 Ga. |
| 5. Mating Flange | 2" x 2" x 3/16 Angle 44" Diameter | Same |
| 6. Sock Holders | 8" Diameter - 18 Pcs. | same |
| 7. Base | 48" Dia. x 10 Ga. | same |
| 8. Shaker Plate | 36" Dia. x 12 Ga. | same |
| 9. Open Eye Bolt | 1/4" x 3" - 18 Pcs. | same |
| 10. Suspension Bolts (4) | 3/8" x 5" Hex | same |
| 11. Suspension Bar Ass'm | Angle Iron Support | same |
| 12. Cover | 47" Dia. x 14 Ga. | same |
| 13. Polyester Socks | (18) 4' x 8" Dia. | (18) 6' x 8" Dia. |
| 14. Band Clamps | 18 Required | same |
| 15. Vibrator | VS 190 | same |

Opt: Single Phase Electric Vibrator

| "Belle" Filter Stock Specifications | |
|---|---|
| Style | PE 37 |
| Fiber | 100% Polyester |
| Weight | 9 oz./Sq. Yd. |
| Construction | Spun/Spun |
| Count | 100W x 60F |
| Air Permeability | 20-30 C.F.M. |
| Mullen Burst | 500 PSI |
| Tensile Strength | Warp Direction 300# Fil Direction 275# |
| Thermal Stability | 2% Max. 300 Degrees F |
| Max Operating Temp | 275 Degrees F |
| Efficiency | 99.95% |

Operation Recommendations

Air Pressure: Do not run vibrator over 80 PSI. Too low air pressure and lack of adequate air supply (too small line to vib.), however, is one of the primary causes for poor performance of air vibrators. For example, 80 PSI at 50 CFM through 150' of 1/2" hose or pipe will lose more than 30 lbs. of pressure due to friction loss. Fittings and bends in the line and other obstructions will also reduce the air pressure. A general rule for estimating compressor output is 5 CFM to 1 HP compressor.

TO RON TRIPLETT - 1 PAGE

DTL
DRILLING TECHNIQUE LTD
168 Georgetown Road, PO Box 459
Lawrence, PA 15055-0459 USA
412.873.7300
Fax 412.873.7301



# QUOTATION

January 23, 1998



Mr. Jim Watkins
Hayward Baker, Inc.
1875 Mayfield Road
Odenton, MD 21113

One (1) Model CP6000 ***Agimixer***
This unit is of the same design as our A6000, but with the following optional equipment:

- 15 HP Paddle Drive
- Two (2) MK2 colloidal mixers driven by 30HP motors
- Weather-tight starter box equipped for local or remote operation
- Colcrete drawings will follow.

There are questions to be answered by Ron Triplitt that should not alter the quoted price.

- F.O.B. Lawrence, PA
- $33,333.00

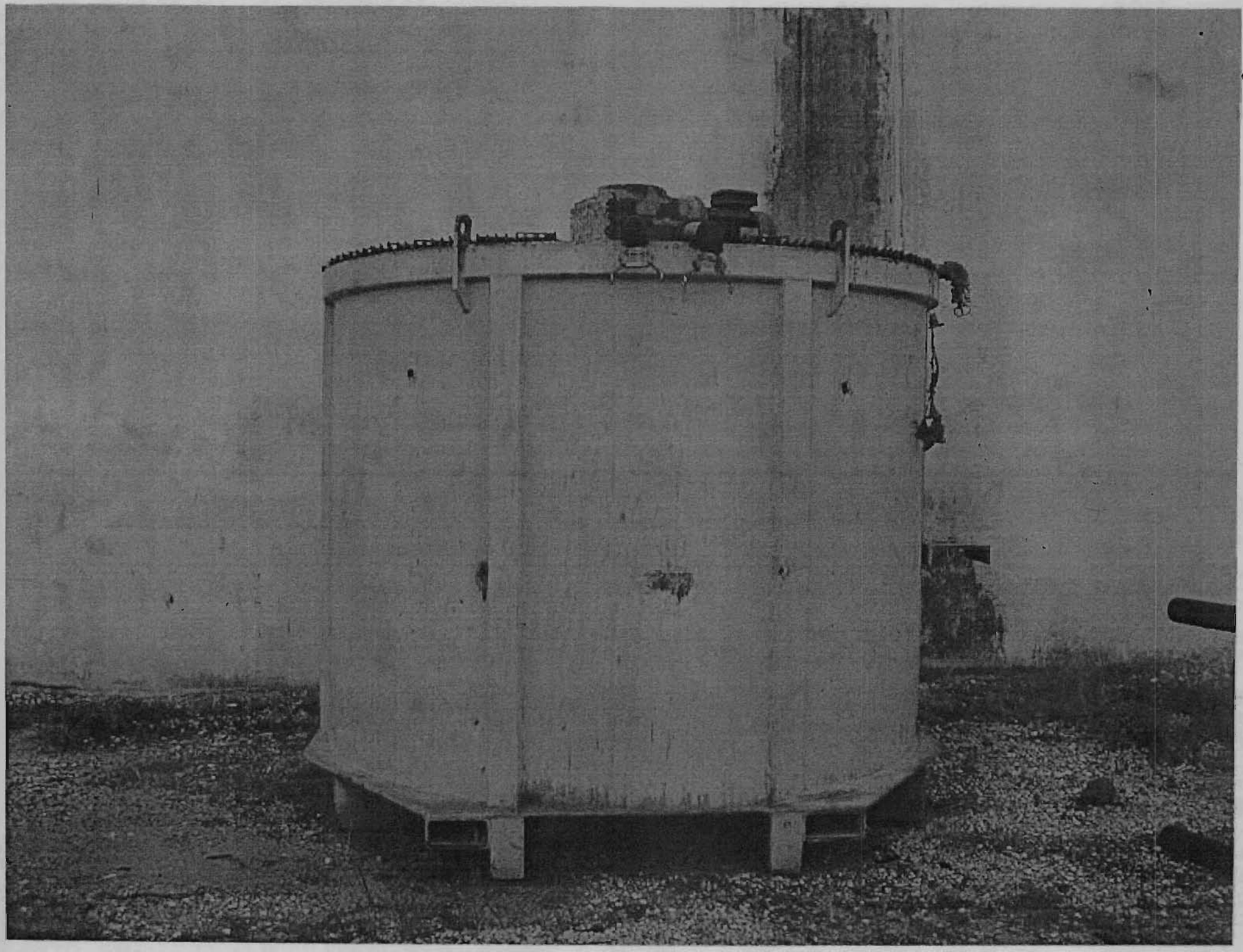
+ 4 WEEKS DELIVERY

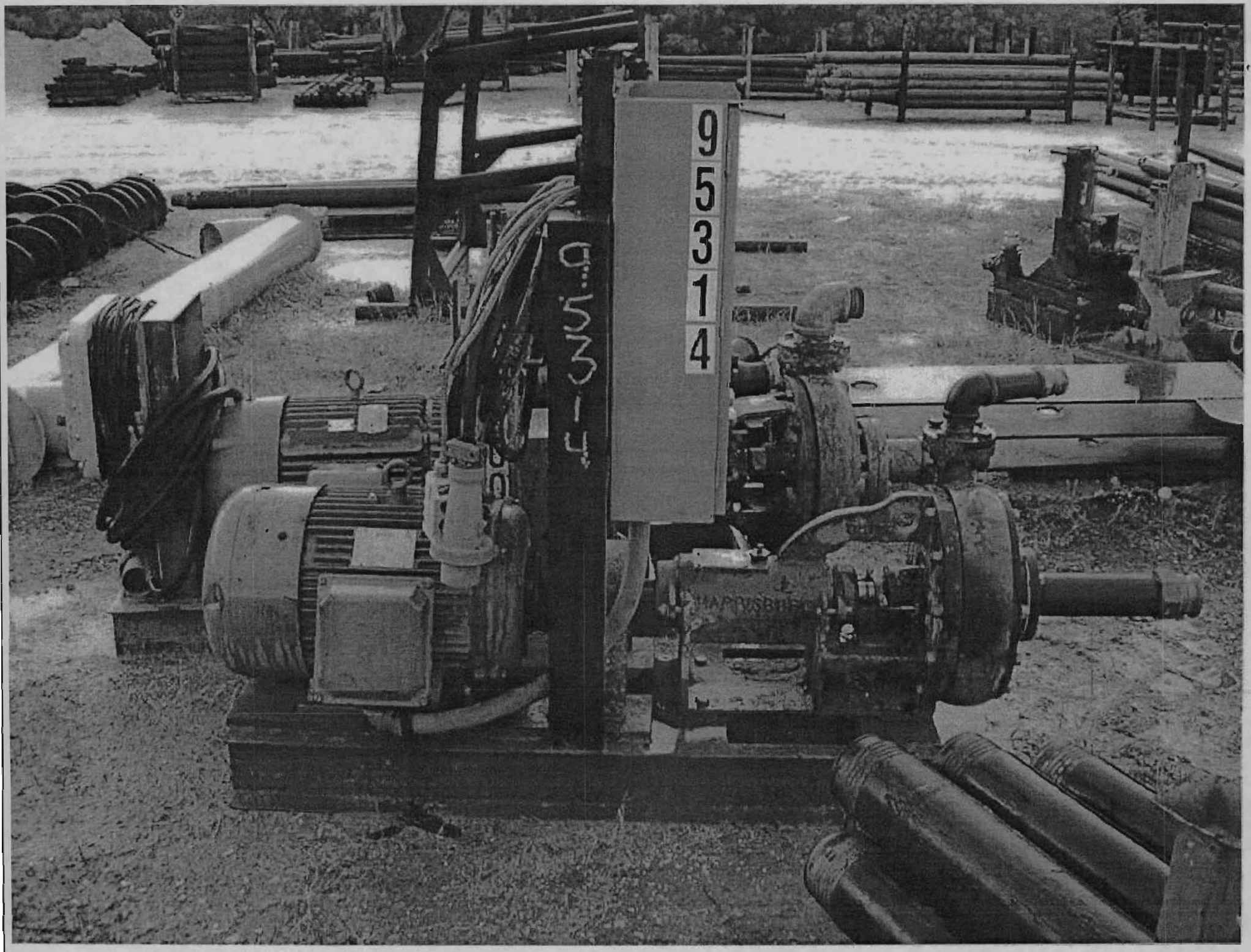
Sincerely,

Richard K. Jones
Vice President - General Manager

RKJ:p

MOB JOB QUOTE

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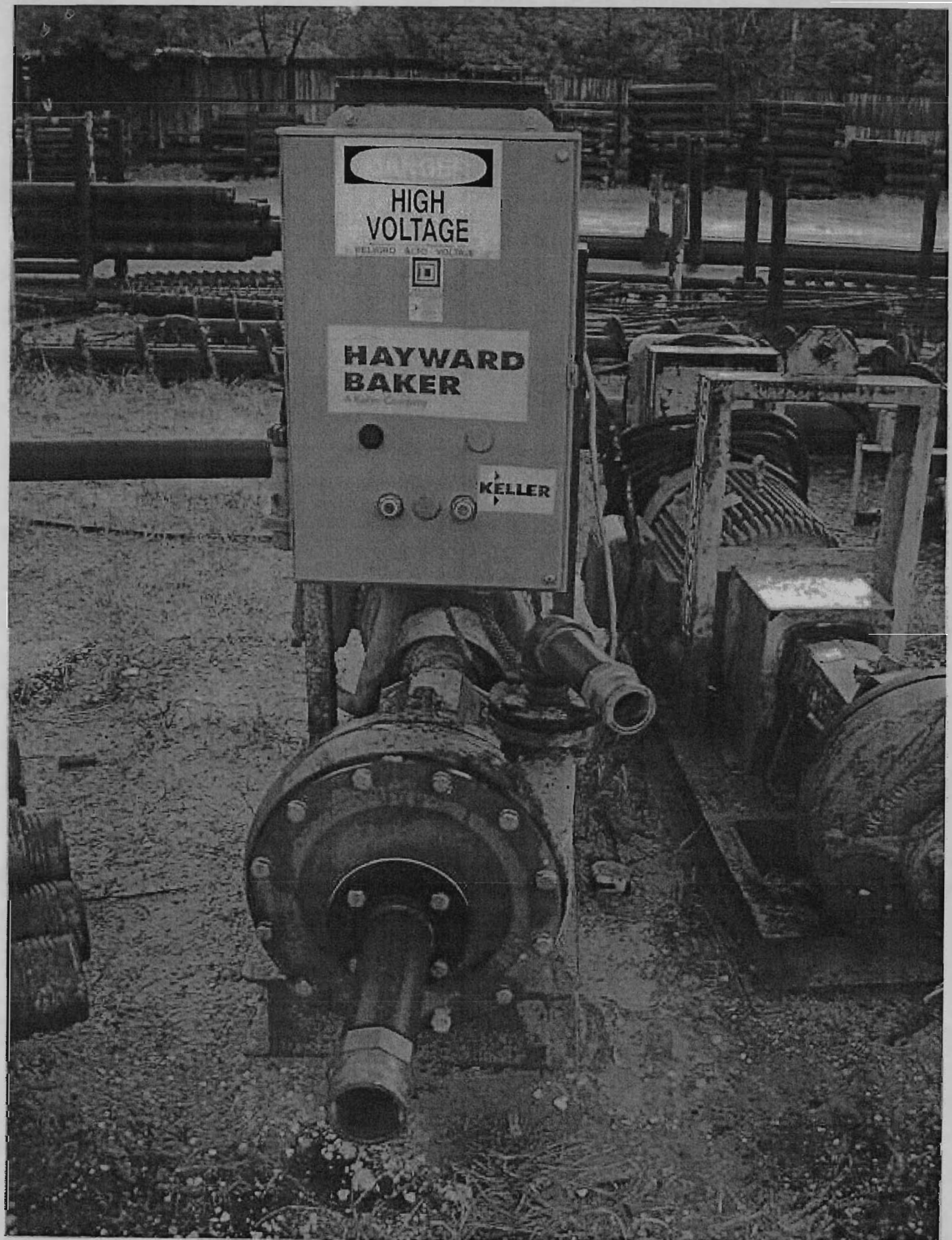

HIGH
VOLTAGE
HAYWARD
BAKER
KELLER

# KELLER Manufacturing Division

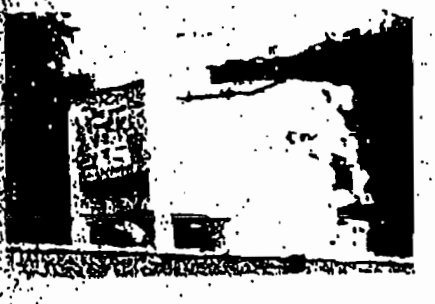
## Paddle Assisted Colloidal Grout Mixers

This important addition to the Colcrete range of Colloidal Grout Mixers allows a combination of both Colloidal and paddle mixing to occur simultaneously or separately as required. For example it is possible to use both mixing methods simultaneously to achieve a rapid mixing of a base mix, followed by only paddle mixing a further product which may be more delicate. Also on completion of the mixing process, the Colloidal mixing unit can be turned off to save wasting power or generating unwanted heat, whilst keeping the product agitated using the paddles. This allows batches of grout to be stored in the mixing vessel until it is required for example to fill a grout car for a tunnelling application. Restarting the Colloidal unit allows rapid discharge of the mixed material at pressures up to 2 bars and flows up to 700 litres per minute for each mixer unit.

The unique mixing action allows rapid mixing of grouts containing sand, up to a sand/cement ratio of 4:1 and neat cement grouts with water/cement ratios as low as 0.36:1 without additives, or lower with plasticisers or superplasticisers. The mixers are also very efficient at mixing bentonite and other clay products as the process accelerates hydration and makes a more stable product.

The range of mixers as detailed below cater for outputs from 8 to 25 cubic metres per hour as batch mixers, dependent upon mix design and material feed rates. The larger mixers may be fitted with weighing facilities which, in conjunction with automatic control, allow materials to be accurately batched in by weight.

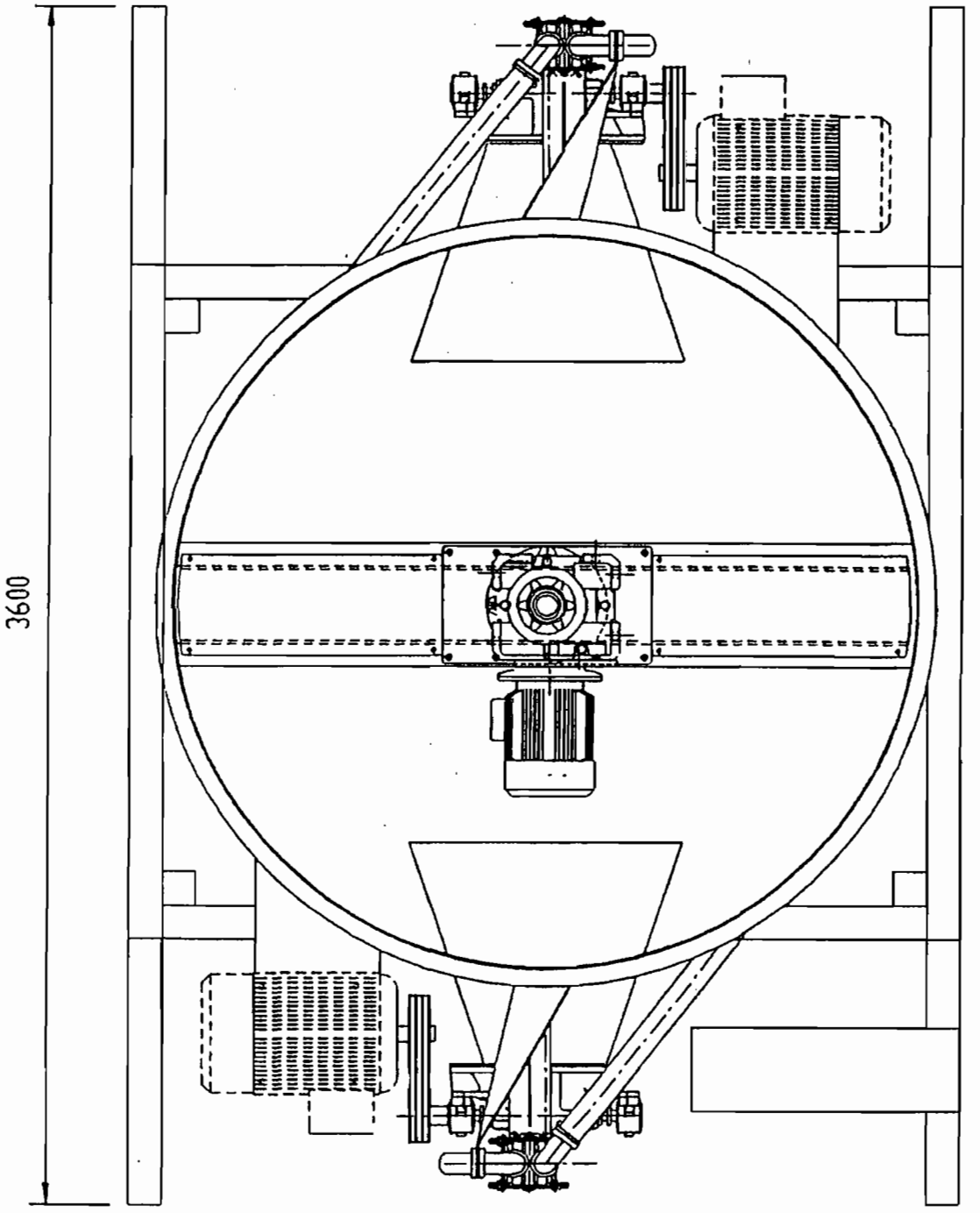
| Model | Max. output (M3/HR) | Batch capacity (Litres) | Colloidal Electric (KW) | Paddle Electric (KW) |
|---|---|---|---|---|
| Colmixer CP6000 | 20 - 25 | 6000 | 2X22 | 11 |
| Colmixer CP4000 | 17 - 22 | 4000 | 2X22 | 7.5 |
| Colmixer CP3000 | 15 - 20 | 3000 | 2X22 | 5.5 |
| Colmixer CP2000 | 10 - 12 | 2000 | 22 | 5.5 |
| Colmixer CP1500 | 9 - 11 | 1500 | 22 | 4 |
| Colmixer CP1000 | 8 - 10 | 1000 | 22 | 3 |



For further details, contact:
Keller Ground Engineering
Manufacturing Division
Thorp Arch Trading Estate
Wetherby, West Yorkshire,
LS23 7BJ England

Phone: +44 (0) 1937 541 118
Fax: +44 (0) 1937 541 367
E-mail
113057.2725@compuserve.com or
Kellerman@compuserve.com

| | | | |
|---|---|---|---|
| ISSUED FOR TENDER | 6/97 | MR | |



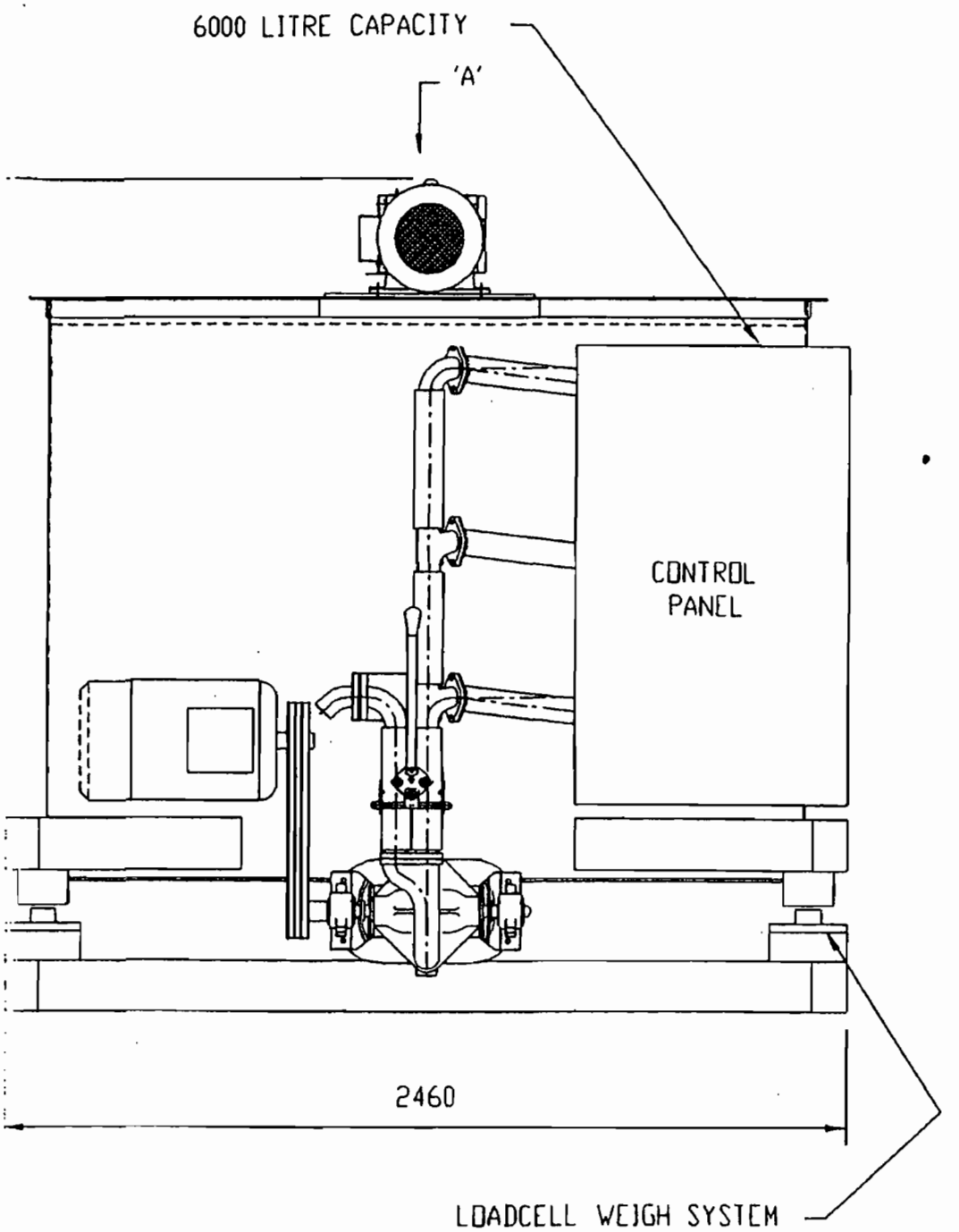

VIEW ON 'A'

| DRG No. | PART No. | DESCRIPTION | QTY. | MATERIAL |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

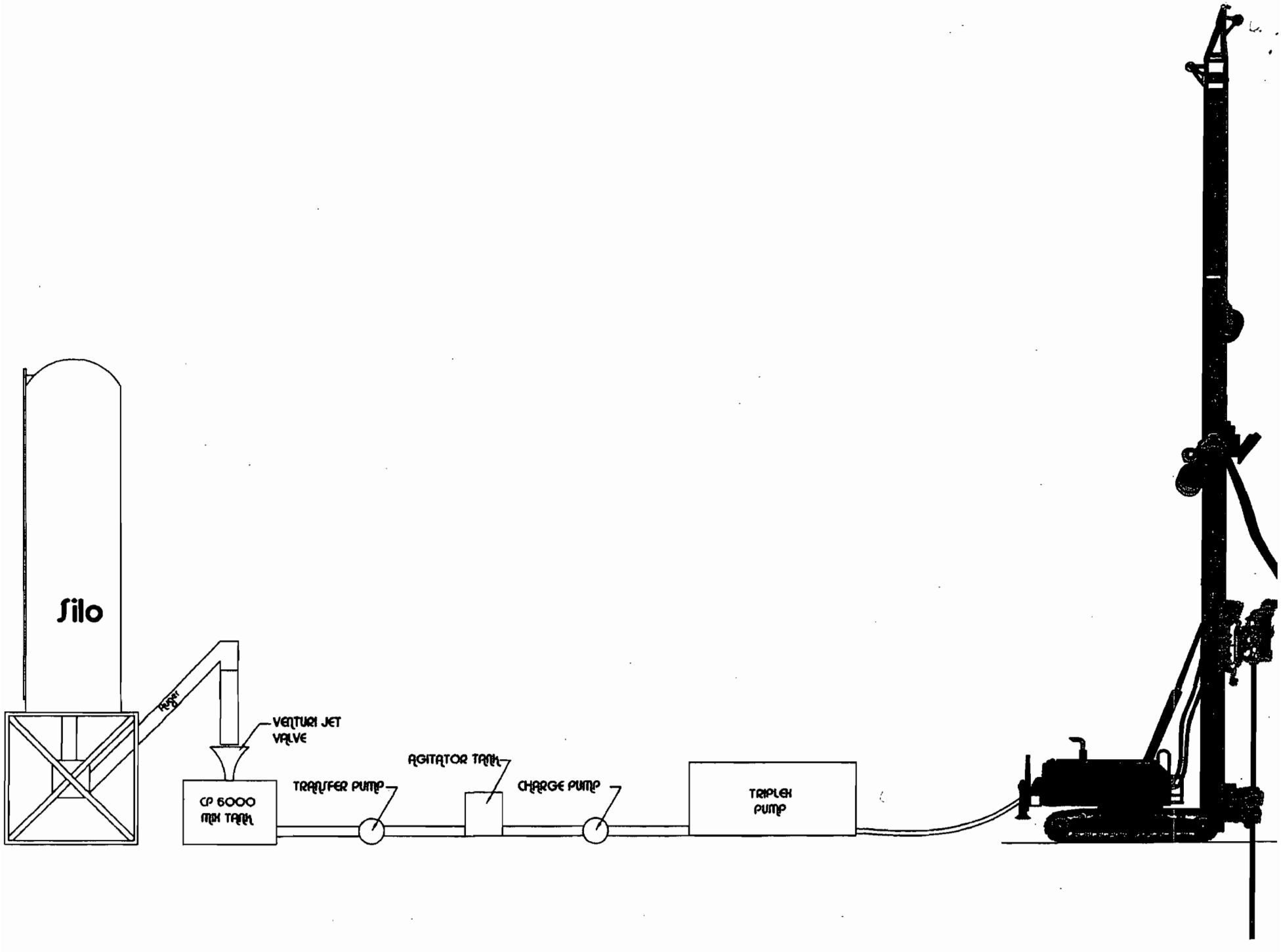
PARTS LIST

KELLER
MANUFACTURING DIVISION
Thorp Arch Trading Estate
Wetherby
West Yorkshire
Telephone 01937 541118
Telefax 01937 541367

THIRD ANGLE PROJECTION IF IN DOUBT - ASK.



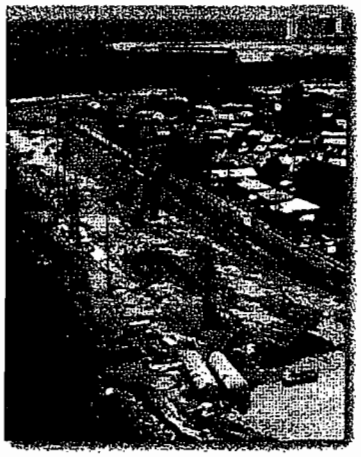

| | | | |
|---|---|---|---|
| DRN MR | STANDARD TOLERANCES UNLESS STATED<br>MACHINING: ±.25mm FABRICATIONS: DIMS >1000mm ±2.0mm<br>DIMS 100-1000mm ±1.5mm<br>ALL WELDING TO BS 5135 DIMS <100mm ±1.0mm | | |
| CHKD | | | |
| DATE 6/97 | | | |
| SCALE 1:20 | ISS 01 | TITLE CP6000 COLLOIDAL/PADDLE MIXER | DRG No. TE/1352 |
| | | | PART No. |


Silo
AUGER
VENTURI JET VALVE
CP 6000 MIX TANK
TRANSFER PUMP
AGITATOR TANK
CHARGE PUMP
TRIPLEX PUMP

HAYWARD BAKER INC.

# JET GROUTING

**Hayward Baker's jet grouting systems offer a unique degree of design flexibility for a broad range of applications.**



*Excavation support begins for construction of Atlantic City, NJ's expressway extension.*

Jet grouting is a Ground Modification system used to create in situ, cemented formations of soil called soilcrete. Jet grouting is an alternative to traditional grouting systems, deep slurry trenching, proprietary underpinning systems, micropiling, or the use of compressed air or freezing in tunneling.

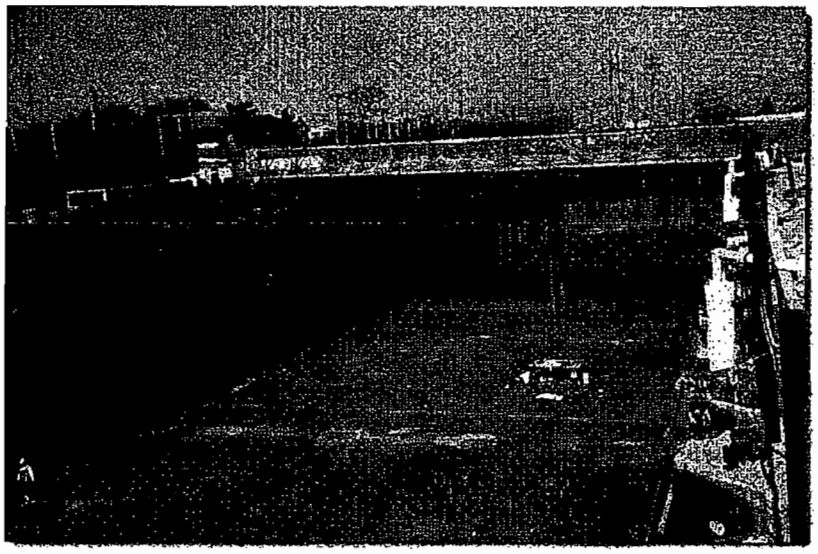
Applications of the jet grouting system fall into three broad categories:

- Underpinning and/or excavation support
- Temporary or permanent stabilization of soft and/or liquefiable soils
- Groundwater or pollution control

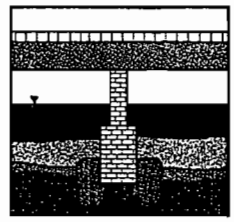
The ability to construct soilcrete in confined spaces and around subsurface obstructions such as utilities, provides a unique degree of design flexibility. Indeed, in any situation requiring control of groundwater or excavation of unstable soil (water-bearing or otherwise) jet grouting should be considered.

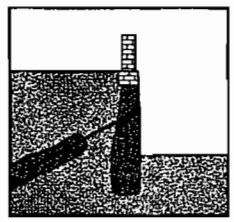
Usually, jet grouting can be accomplished without disrupting normal facility operations. Jet grouting is not only one of the safest methods of construction available but in many cases the process is so fast that construction schedule savings are realized.

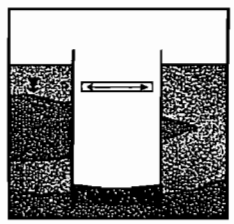
The recent development of small containerized, highly mobile support equipment has enabled starting work on the first day of setup, greatly reducing mobilization and demobilization costs. This ability will enable many projects previously considered too small to absorb these costs to become usable.

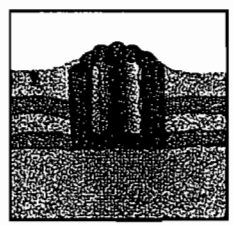


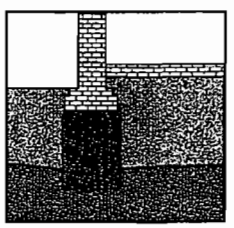
*SuperJet struts support the tunnel alignment between the existing Penrose Canal and an established residential area.*

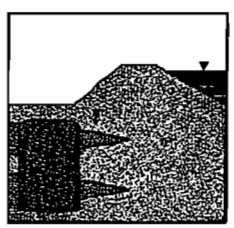


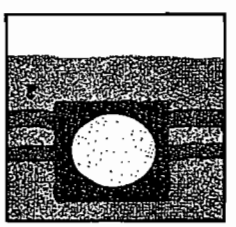










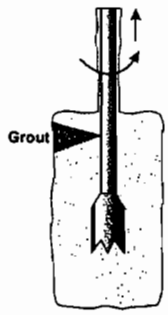


**HAYWARD BAKER**
Geotechnical Construction

KELLER

# Jet Grouting Systems and Applications . . .

There are three traditional jet grouting systems. Selection of the most appropriate system is generally a function of the in situ soil, the application, and the physical characteristics of soilcrete required for that application. However, any system can be used for almost any application providing that the right design and operating procedures are used.

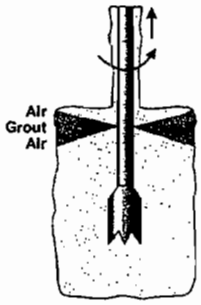



## Single Fluid Jet Grouting (Soilcrete S)

Grout slurry is pumped through the rod and exits the horizontal nozzle(s) in the monitor with a high velocity [approximately 650 ft/sec (200m/sec)]. This energy causes the erosion of the ground and the placement and mixing of grout slurry in the soil. In gravelly soils, soilcrete column diameters of 2 to 4 ft (0.6-1.2m) can be achieved. In loose, silty and sandy soils, larger diameters are possible. Single fluid jet grouting is generally less effective in cohesive soils.

**Soilcrete S Applications**

- *Cutoff walls in porous soil*
- *Soil consolidation for tunnel roof*
- *Bottom bracing for deep trenches in soft soil*
- *Anchorages*
- *Sealing applications*

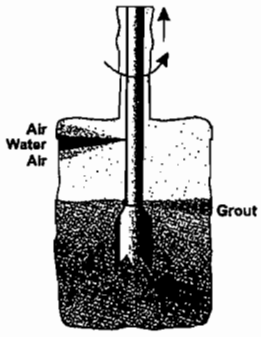



## Double Fluid Jet Grouting (Soilcrete D)

A two-phase internal rod system is employed for the separate supply of grout slurry and air down to different, concentric nozzles. Grout slurry is used for eroding and mixing with the soil. The air shrouds the grout slurry jet and increases erosion efficiency. Soilcrete column diameters of more than 3 ft (1.0m), in medium to dense soils, and more than 6 ft (1.8m) in loose soils, may be achieved. The double fluid system is more effective in cohesive soils than the single fluid system.

**Soilcrete D Applications**

- *Soil stabilization*
- *Some underpinning applications*
- *Panel cutoff walls*
- *Bottom bracing for deep trenches in soft soil*

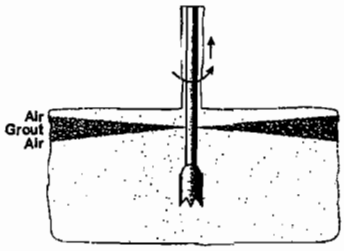



## Triple Fluid Jet Grouting (Soilcrete T)

Grout slurry, air and water are pumped through different lines to the monitor. High velocity coaxial air and water form the erosion medium. Grout slurry emerges at a lower velocity from separate nozzle(s) below the erosion jet. This somewhat separates the erosion process from the grouting process and yields a higher quality soilcrete. Soilcrete columns with diameters ranging from 3 ft (0.9m) to more than 5 ft (1.5m) can be achieved. Triple fluid jet grouting is the most effective system for cohesive soils.

**Soilcrete T Applications**

- *Underpinning and excavation support*
- *Horizontal slab/ ground water control*
- *Panel cutoff walls*
- *Sealing applications*
- *Most fine grained soil stabilization*



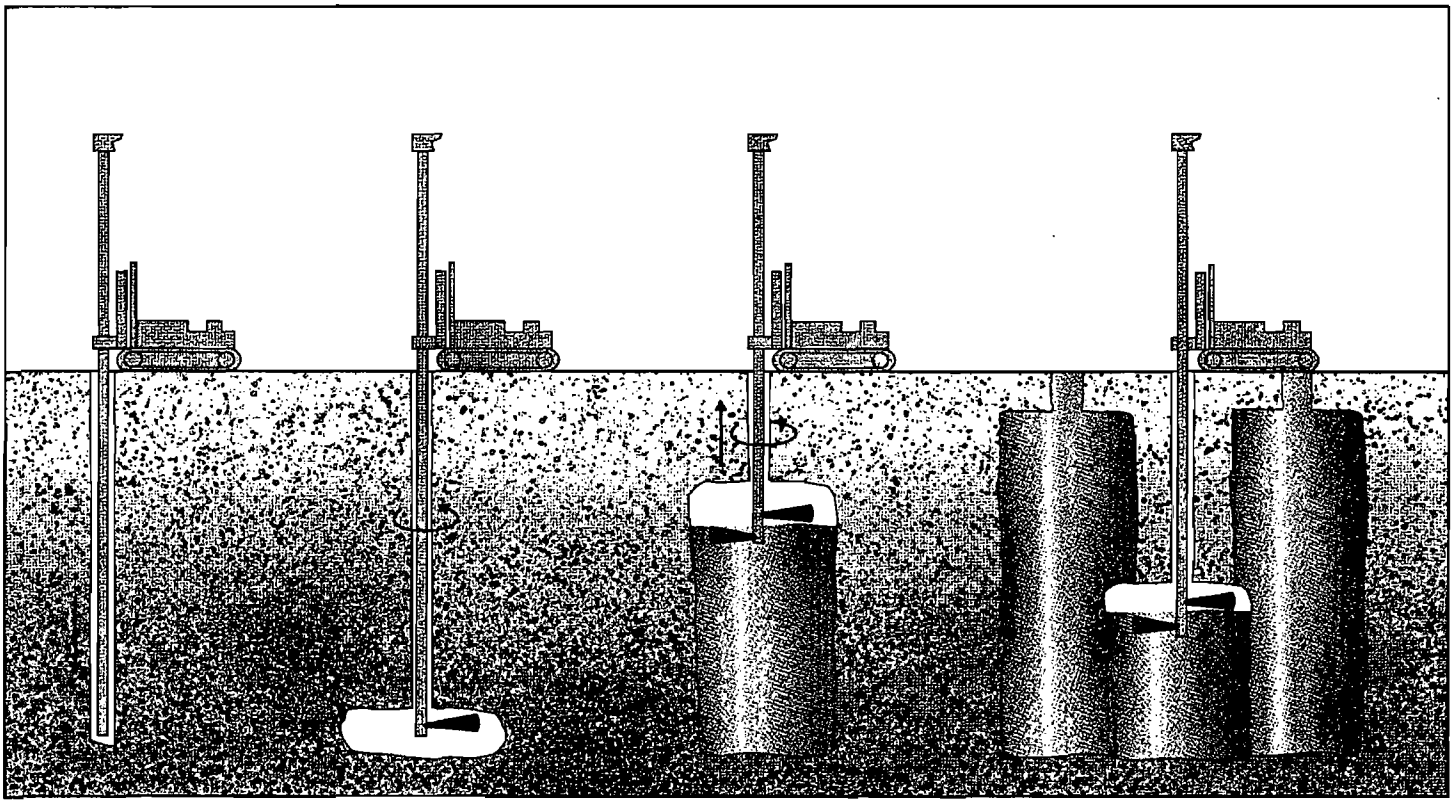

## SuperJet Grouting

Grout slurry, air and drilling fluid are pumped through separate chambers in the drill string. Upon reaching the design drill depth, jet grouting is initiated with high velocity, coaxial air and grout slurry to erode and mix with the soil, while the pumping of drilling fluid is ceased. This system uses opposing nozzles and a highly sophisticated jetting monitor specifically designed for focus of the injection media. Using very slow rotation and lift, soilcrete column diameters of 10 to 16 ft (3-5m) can be achieved. This is the most effective system for mass stabilization application or where surgical treatment is necessary.

**SuperJet Applications**

- *Horizontal slab/ground water control*
- *Stabilization of liquefiable strata*
- *Panel cutoff walls*
- *Structural supports across excavation walls*
- *Stabilization of soft soil for microtunneling*

***The experience of the specialty contractor in selecting the optimum Jet Grouting system and operating procedures is critical to the success of each project.***



## Jet Grouting Procedures

Predrilling or foundation coring may be necessary to access the treatment zone. The borehole is typically 6 inches (150mm) in diameter, and is stabilized by using grout or a drilling mud during the procedure. Since jet grouting is a bottom-up procedure, erosion is initiated at the design depth with high velocity injection of cutting and replacement fluids. This continues with consistent, uniform rotation and lifting to create column geometry, while expelling eroded spoil out of the top of the borehole. Designed integration of adjacent columns creates a soilcrete mass. Since jet grouting equipment operates from above foundation grade, and soilcrete is constructed in a designed sequence, structural integrity is maintained and safety considerations are simplified. Jet grouting equipment is specially designed to be highly maneuverable and capable of low-headroom interior work as well as restricted-access exterior work.

## Jet Grouting Geotechnical and Structural Considerations

Jet grouting is effective across the widest range of soil types of any grouting system, including silts and some clays. Because it is an erosion based system, soil erodibility plays a major role in predicting geometry, quality and production. Cohesionless soils are typically more erodible than cohesive soils, as shown at right. Since the geometry and physical properties of the soilcrete are engineered, the degree of improvement is readily and accurately predictable.

***A properly designed structure should be analyzed by a professional engineer familiar with the site conditions and technologies applied.***

## Quality Assurance

Quality assurance and quality control are critical components of a successful jet grouting program, ensuring that subsurface soils are consistent with design assumptions and that design parameters are met or exceeded throughout the project.

Quality assurance begins with a test section to verify the design geometry of the soilcrete and the quality and strength characteristics of the soilcrete product.

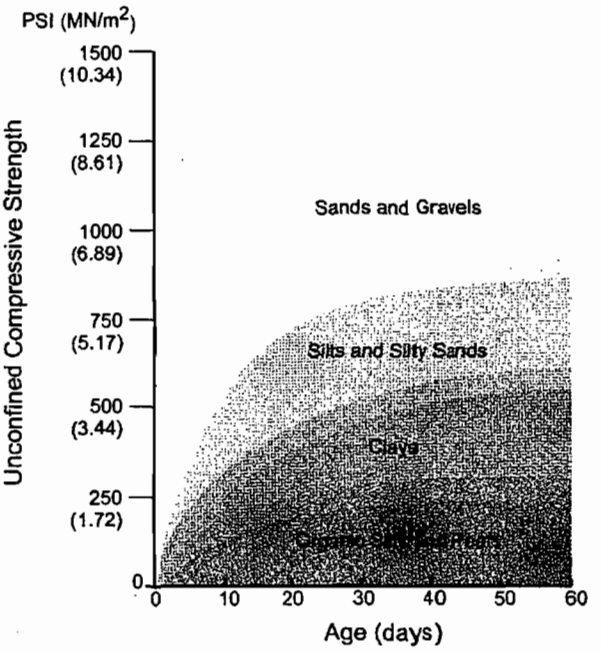
Retrieved wet-grab and core samples are laboratory tested to confirm that satisfactory unconfined compressive strengths are achieved. The pre-production quality assurance measures form the basis for quality control during production grouting. Computerized data collection of all jet grouting parameters is available along with continuous real-time observation.

## Quality Control

In addition to the quality control inspection items for soilcrete element construction, additional project-specific quality control measures such as structural monitoring or permeability testing may be required.

Controlled jet grouting must create a spoil material during the erosion process. The volume of spoil can be predicted from the injected volumes and is typically in the range of 40 to 60 percent of the soilcrete volume. The spoil retains a significant cement content, and gains strength over time. Within 12 hours it can typically be handled as a firm to stiff clay and is frequently used as a construction fill.

| QUALITY CONTROL INSPECTION ITEMS | |
|---|---|
| **Drilling** | Location, angle, depth, methods to maintain repeatability |
| **Batching** | Preparation of grout slurry for consistency in material content and physical and chemical properties |
| **Jetting** | Checking of drill parameters (lift, speed, rotation rate) and injection parameters (pressure and flow of all components) |
| **Documentation** | Accurate documentation for each element constructed. Construction times and correlation to any sampling performed |
| **Sampling and Testing** | Retrieval of representative samples for external testing |



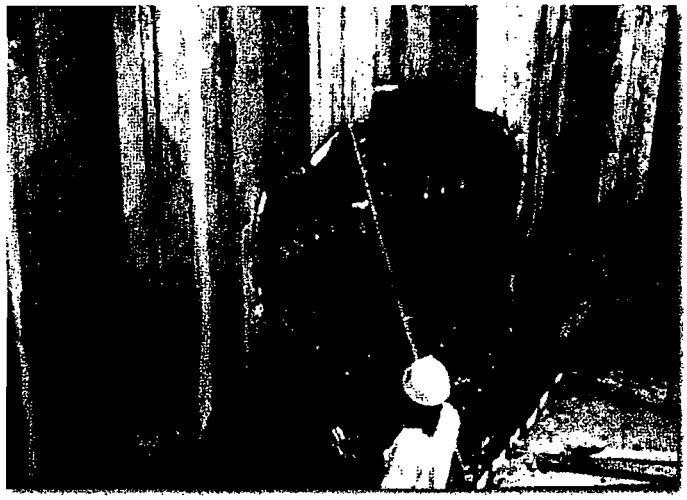

*Soilcrete strengths are variable and difficult to predict, particularly in layered soils. This chart represents an estimate of average results expected.*

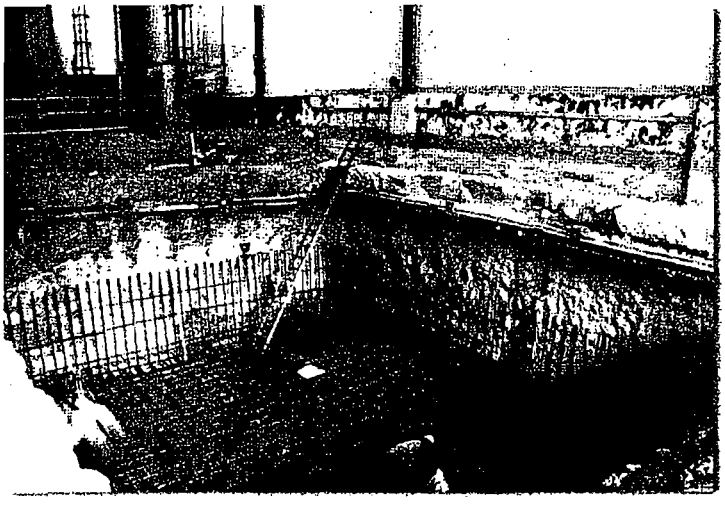
*Typically, Soilcrete cores are greater than 3 inches in diameter and recovery is greater than 75 percent with specialized coring equipment.*

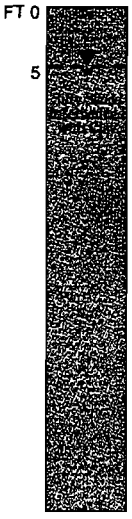
# Jet Grouting Case Histories . . .


### Nimitz Relief Sewer
### Honolulu, Hawaii

As a value-engineered and less disruptive alternative to open cut construction, jet grouting was selected to provide a homogenized tunnel horizon and minimize post-construction settlement for the installation of a 54-inch (1.4m) relief sewer through soft, lagoonal deposits. Two rows of interconnected, 4-ft (1.2m) diameter soilcrete columns were installed to bedrock over a 2,800 lf (850 linear meter) stretch of tunnel alignment to prepare an encapsulated tunnel horizon for micro-tunneling. In addition to providing a fully stabilized tunneling face, the soilcrete mass ensured that post-construction settlement of the sewer would be eliminated.

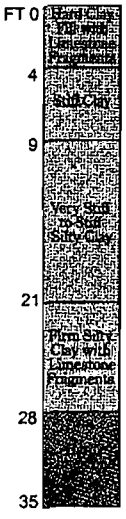






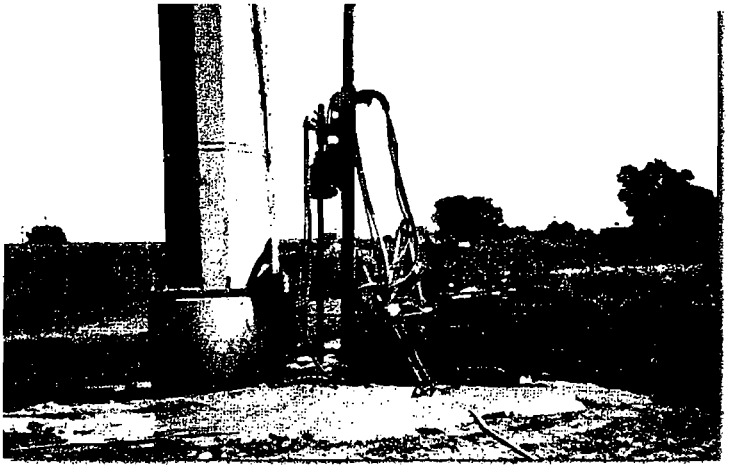

### Kraft Foods
### Dover, Delaware

For construction of a 20-ft (6m) deep railcar unloading pit within an existing building, jet grouting performed three functions: excavation support, underpinning, and groundwater control. To meet project performance objectives, a 'bathtub' configuration was constructed via a perimeter wall of 20-ft (6m) deep, interconnected soilcrete columns enclosing a 6-ft (1.8m) thick soilcrete base. The perimeter columns provided excavation support while those at the corners of the pit also underpinned the existing adjacent footings. The jet grouting program successfully prevented building movement and vertical and horizontal groundwater infiltration.

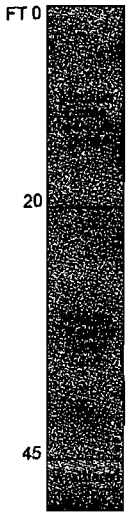



### Transmission Towers
### Dallas, Texas

Four, 180-ft (55m) tall transmission tower structures were moving laterally on the compression leg. This was due to insufficient diameter and embedment length of the drilled shaft foundations. To improve the factor of safety against failure at ultimate loads, jet grouting was used to stabilize the compression leg foundation of each tower down to a competent bearing strata. Prior to production, a test column was constructed to establish effective column diameter, forming the basis for the design. An average of 12, 4-ft diameter (1.2m) soilcrete columns were constructed at each tower to hard limestone.

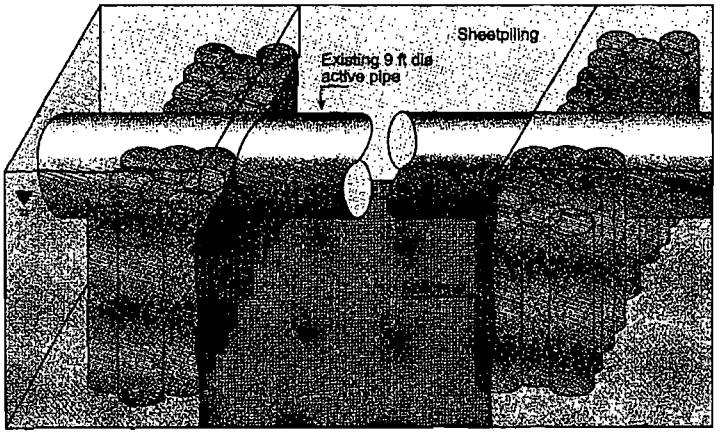


***When owners and contractors need a fast, technically-effective solution to a tough geotechnical probem, Jet Grouting gets the job done.***




## General Hospital Center at Passaic
## Passaic, New Jersey

Concerned that a conventional pit underpinning method would result in excessive settlement of the existing, five-story structure, the general contractor elected to use a jet grouting alternative for construction of a new, three-story hospital addition. For the addition, the site was pre-excavated to the top of the existing foundation. Column footings and foundation walls were then underpinned to a competent bearing strata by 3.5-ft diameter (1.1m), contiguous soilcrete columns. The continuous soilcrete wall thus formed also provided support for subsequent deep excavation of the prevailing clean sands. Existing building settlements were negligible.



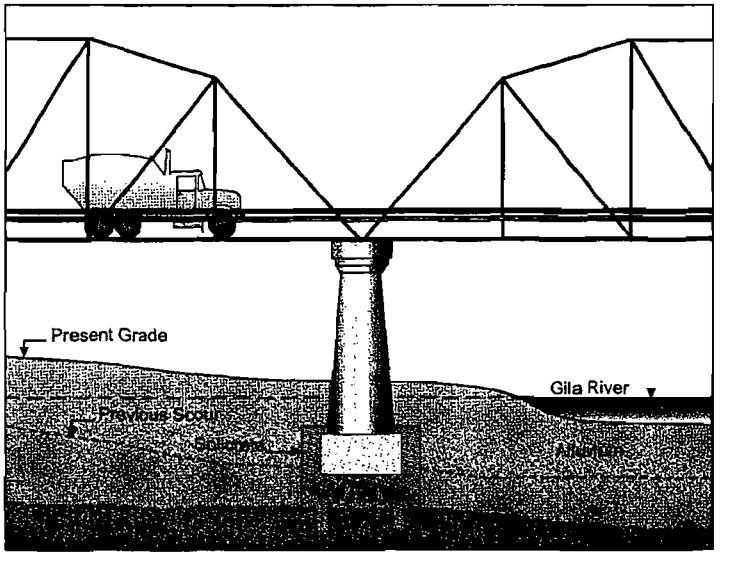


## Virginia Key WWTP
## Virginia Key, Florida

Prior to incorporation of a storm surge pressure relief system into an existing outfall pipe, all three project requirements of underpinning, excavation support, and groundwater control were met by jet grouting. At each end of the excavation area, jet grouting was performed adjacent to and below the 8.5-ft (2.6m) diameter pipe down to limestone bedrock. Angled drilling and jet grouting beneath the pipe invert completed the encapsulation, thus forming a groundwater seepage barrier as well as excavation support and underpinning across the width of the excavation. Sheetpiles connected the sides of the excavation with the grouted zones. Safe operational integrity was maintained throughout the work.

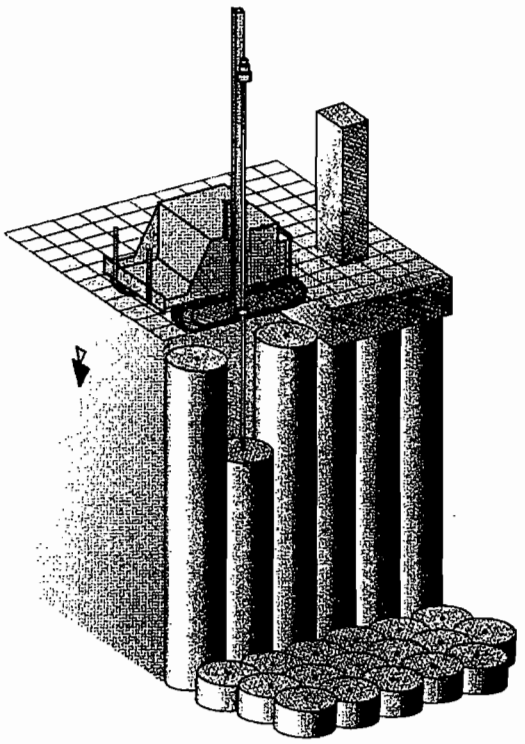

## U.S. Highway 80 Bridge
## Maricopa County, Arizona

During heavy winter rains in the Arizona desert, the Gillespie Dam failed, sending water up to 150,000 cf (4,250m$^3$) per second down the Gila River. Just 100 yds (92m) downstream, an old bridge for Highway 80 crosses the river. Flood waters were concentrated toward the eastern portion of the nine-span structure, scouring cavities beneath three easternmost piers and resulting in minor settlements and cracking. Jet grouting was recommended as the most economic method of underpinning and protecting the existing footings. Interconnected soilcrete columns were installed around the upstream portions of the pier and were either keyed into underlying basalt or taken to sufficient depths into underlying alluvium to underpin and protect the footings from future scour.



# Advantages of Hayward Baker's Jet Grouting Systems

- *Nearly all soil types groutable*
- *Specific in situ replacement possible*
- *Designable strength and permeability*
- *Treatment to specific subsurface locations*
- *Only inert components*
- *No harmful vibrations*
- *Can be performed in limited working space*
- *Any cross-section of soilcrete possible*
- *Maintenance-free*
- *Safest method of underpinning construction*
- *Ability to work around buried active utilities*
- *Most effective method of direct underpinning of structures and utilities*
- *Much faster than alternative methods*



## Why Should You Choose Hayward Baker's Jet Grouting?

As North America's largest geotechnical contractor, Hayward Baker has the resources to build your project. We manufacture much of our own equipment, ensuring the best performance and reliability in the industry.

From job start-up to installation of the last jet grout column, our attention to quality control ensures project specifications are achieved. Our network of offices and full-service equipment yards means fast mobilization and reduced start-up costs.

Hayward Baker is committed to providing the most economical solution that satisfies the technical requirements of each project.

Whether a situation is typical or unique, we have the experience and innovation to assist engineers, contractors and owners with identifying and implementing the best solution. For a variety of subsurface conditions, jet grouting may be the answer.

**Hayward Baker Inc.**

**Maryland**
410-551-8200
410-551-1980

**California**
805-933-1331
858-514-2170
925-825-5056

**Colorado**
303-469-1136

**Florida**
813-884-3441
954-977-8117

**Georgia**
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**New York**
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**Tennessee**
865-966-0294

**Texas**
817-625-4241
281-668-1868

**Washington**
206-223-1732

**British Columbia**
604-294-4845

**Website** www.HaywardBaker.com

**Email** info@HaywardBaker.com

**Keller Group — North America**

Hayward Baker Inc.

Case Foundation Company

Case Atlantic Company

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HAYWARD BAKER
Geotechnical Construction

KELLER

**Southern Environmental Sciences, Inc.**
1204 North Wheeler Street ☐ Plant City, Florida 33563 ☐(813) 752-5014, Fax (813) 752-2475

September 2011



Florida Department of Environmental Protection
Receipts
3800 Commonwealth Blvd.
Mail Station 77
Tallahassee, FL 32399

Phone: (850) 921-9586

Re: Air General Permit Re-Registration for Concrete Batching Plant (CBP)
Current Permit No. 7775362-001-AG
Hayward Baker, Inc.
Headquarters Location: 6850 Benjamin Road, Tampa, FL 33634

Gentlemen:

On behalf of Hayward Baker, Inc., Southern Environmental Sciences, Inc. (SES) is pleased to submit the enclosed re-registration FORM for the above referenced existing, previously permitted facility. Also enclosed is the $100.00 fee check.

If you have any questions concerning the permit application please contact me at office phone (813) 752-5014 or email at: lrobinson@sesfla.com.

Sincerely,

SOUTHERN ENVIRONMENTAL
SCIENCES, INC.

Lynn Robinson, P.E.
Permitting Manager

Encl: CBP Re-Registration Form and $100.00 fee check for Air Permit 7775362-001-AG

Cc: Mr. Dean Elliott, Operations manager, Hayward Baker, Inc.,
Email: DAElliott@haywardbaker.com

*SES Project 11P266*