

Clemco Industries Corp.

presents

Design Considerations for
Abrasive Blast Rooms
&
Recovery Systems

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PLANNING CONSIDERATIONS

- ENCLOSURE
- LOCATION OF ROOM
 - COMPLETELY INSIDE
 - ROOM INSIDE, COLLECTOR OUTSIDE
 - COMPLETELY OUTSIDE
 - PARTIALLY OUTSIDE
- RECOVERY SYSTEM LOCATION
 - ON TOP OF EXISTING FLOOR
 - FLUSH-MOUNTED (RECOVERY SYSTEM IN PIT)

TYPES OF ENCLOSURES

- FLANGE BOLT
 - ECONOMICAL
 - MAXIMUM WIDTH LIMITED TO 16 FEET
- HYBRID FLANGE BOLT
 - FLANGE BOLT WITH STIFFENERS
- COLUMN BOLT
 - ALLOWS FOR WIDER ENCLOSURES
 - STRONG ENOUGH TO SUPPORT MONORAIL

Flange Bolt Room



Column Bolt Room



- Structural steel framework
- Galvanized steel panels

COMMON FEATURES

- GALVANIZED CONSTRUCTION
- FLOOR-TO-CEILING DOORS CAN BE INSTALLED INTO ONE OR BOTH ENDS
- PERSONNEL DOORS CAN BE INSTALLED IN ANY WALL PANEL
 - REQUIRED EVERY 30 FEET PER O.S.H.A.
- OPTIONS
 - EXTERIOR WORK STATIONS
 - SPECIAL LIGHTING

Inlet Door Installation



AIR INLETS



- Baffled inside & outside
- Filtered

MANDOOR



- Panic Hardware
- Viewer with cover

ILLUMINATION

- TYPICALLY, 50-80 FOOT CANDLES IS SUFFICIENT
- FLUSH-MOUNTED TO CEILING
 - PROTECTED FROM INADVERTENT BLASTING
 - SEALED TO AVOID DUST INGRESS
- ADDITIONAL WALL-MOUNTED LIGHTS PROVIDE SHADOW FREE ILLUMINATION

Light Module



EXTERIOR WORK STATION



RECOVERY FLOOR TYPES

- SWEEP-IN
 - 2x2 AND 3x3 HOPPERS
 - MECHANICAL RECOVERY
 - FOR DENSE MEDIA, SUCH AS STEEL GRIT AND SHOT
 - M-SECTION STRIP
 - PNEUMATIC RECOVERY
 - FOR LIGHTWEIGHT MEDIA, SUCH AS GLASS BEADS, ALUMINUM OXIDE, AND PLASTIC
- PARTIAL FLOOR
 - MULTIPLE M-SECTIONS
 - SCREW
 - -BELT

RECOVERY FLOOR TYPES

continued

- FULL FLOOR
 - MECHANICAL RECOVERY
 - FLAT-TRAK
 - SCREW CONVEYORS
 - BELT CONVEYORS
 - PNEUMATIC RECOVERY
 - M-SECTION

FULL FLOOR RECOVERY

- COMPLETELY AUTOMATES THE MEDIA RECOVERY PROCESS
- MECHANICAL RECOVERY
 - SCREW CONVEYOR
 - -BELT CONVEYOR
 - FLAT-TRAK
- PNEUMATIC RECOVERY
 - M-SECTION

PARTIAL FLOOR RECOVERY

- REDUCES MANHOURS SPENT ON RECOVERY, COMPARED TO SWEEP-IN
- SCREW OR BELT CONVEYOR(S) TO BE USED WITH DENSE MEDIA SUCH AS STEEL
- M-SECTION STRIPS TO BE USED WITH LIGHTWEIGHT MEDIA SUCH AS ALOX AND GLASS BEADS

HOPPER RECOVERY SYSTEMS

- SURFACE MOUNTED OR RECESSED
- LOW INITIAL COST
- REQUIRES MANUAL LABOR
 - SWEEPING OR SHOVELING
- 120 MESH MEDIA OR COARSER



3 x 3 HOPPER RECOVERY SYSTEM

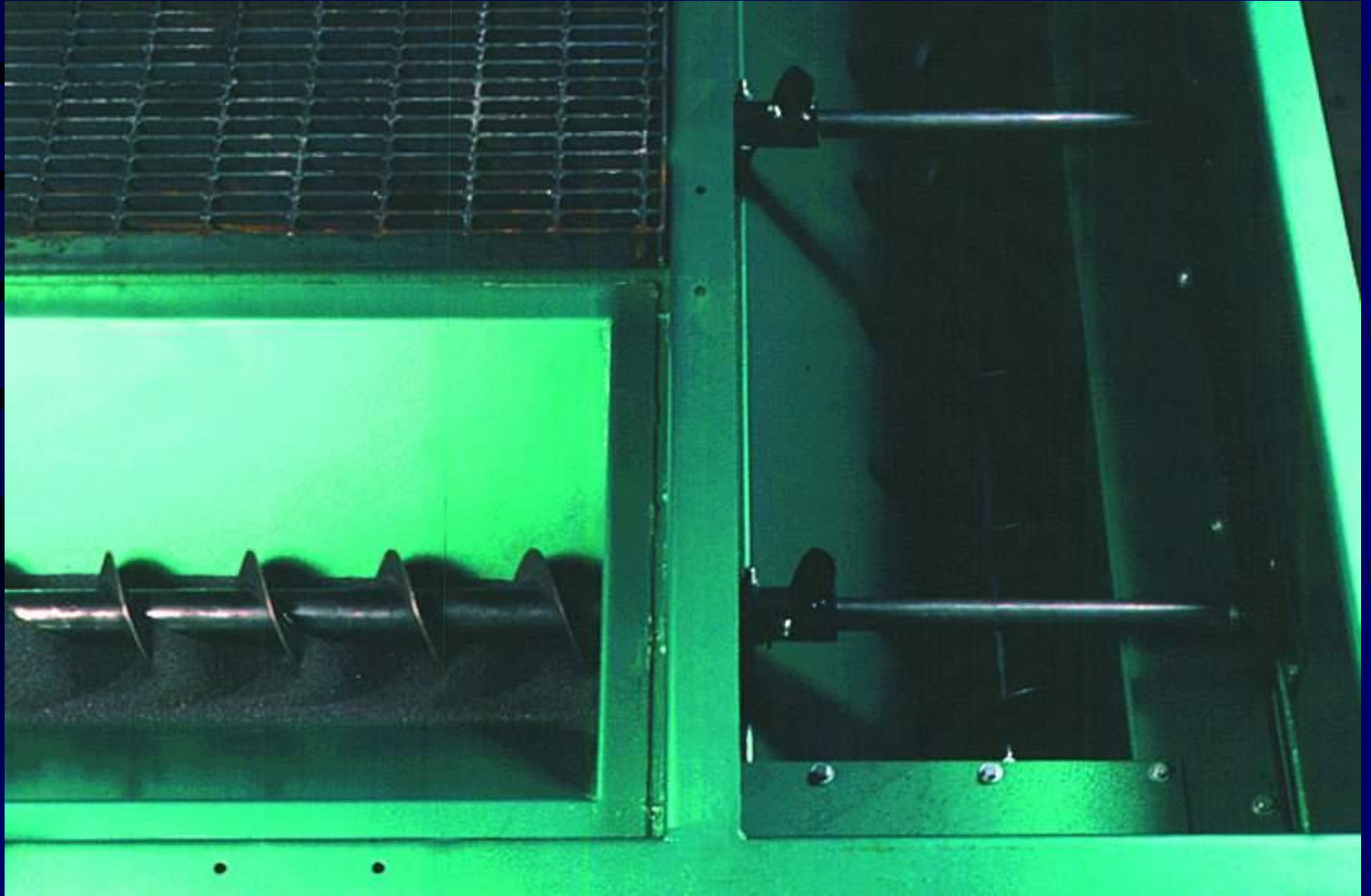
3 x 3 HOPPER SWEEP-IN



BELT RECOVERY



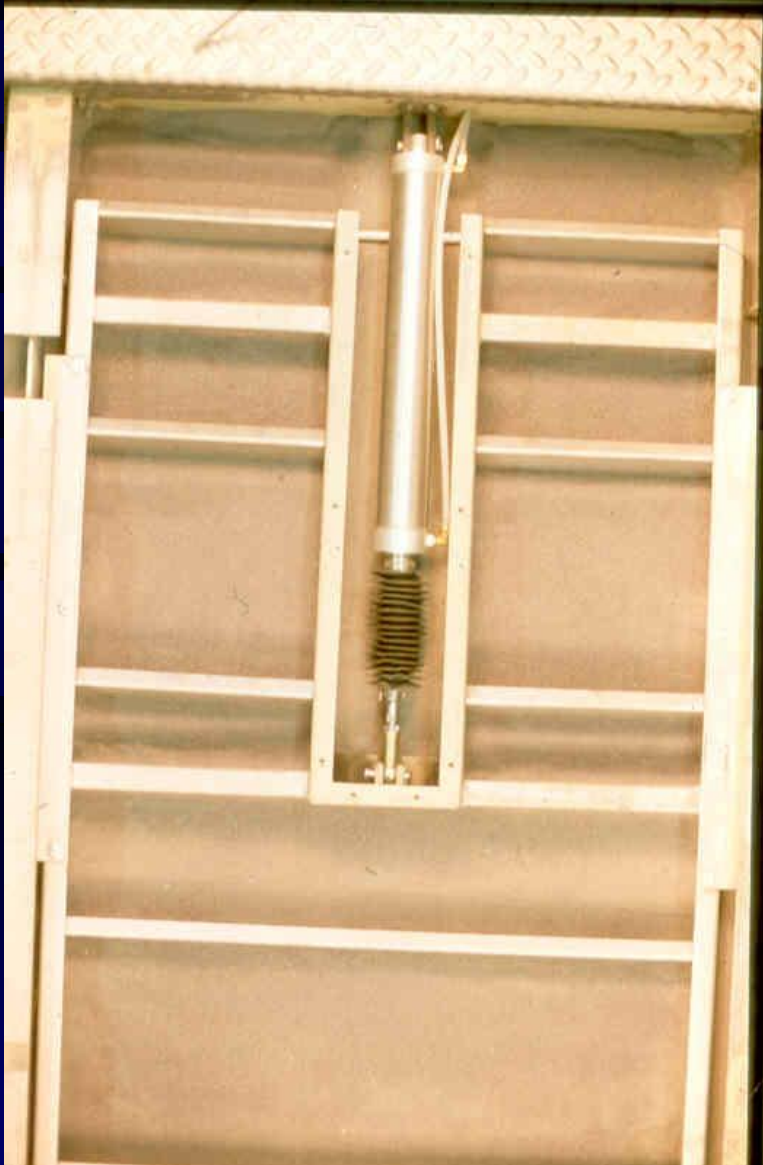
SCREW RECOVERY



FLAT-TRAK

- LOW PROFILE
 - 6-1/2" TALL
 - MINIMAL EXCAVATION REQUIRED FOR PIT
 - SHORT RAMPS ON SURFACE MOUNTS
- FAST INSTALLATION
 - FAST DELIVERY - COMPONENTS SHIPPED FROM STOCK
 - MODULAR FLOOR
 - TRACKS WELDED TO STEEL FLOOR
 - FRAMES DROP IN PLACE BETWEEN TRACKS
- EASY MAINTENANCE

Flat Trak Drive



- Booted for protection

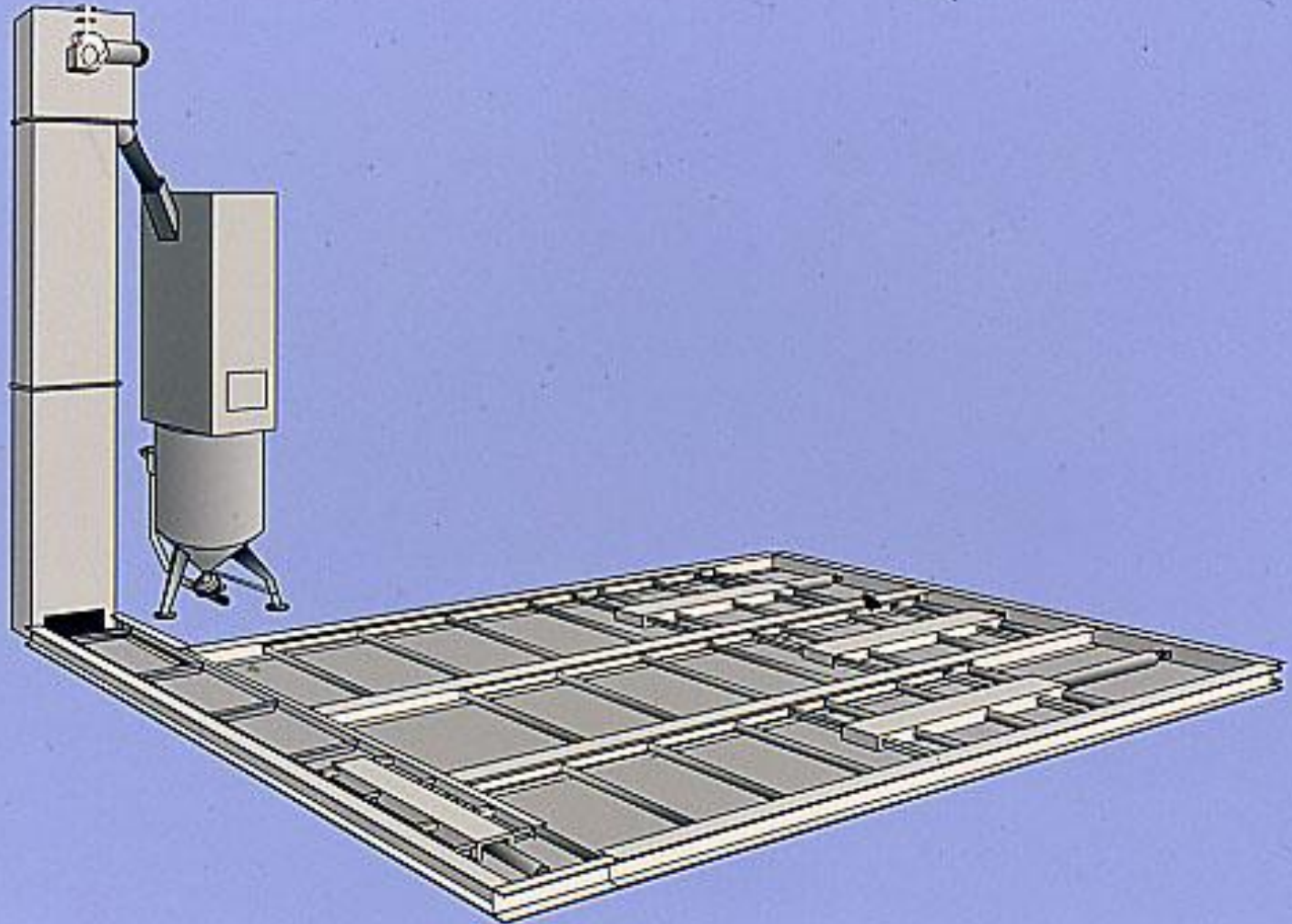
Flat Trak



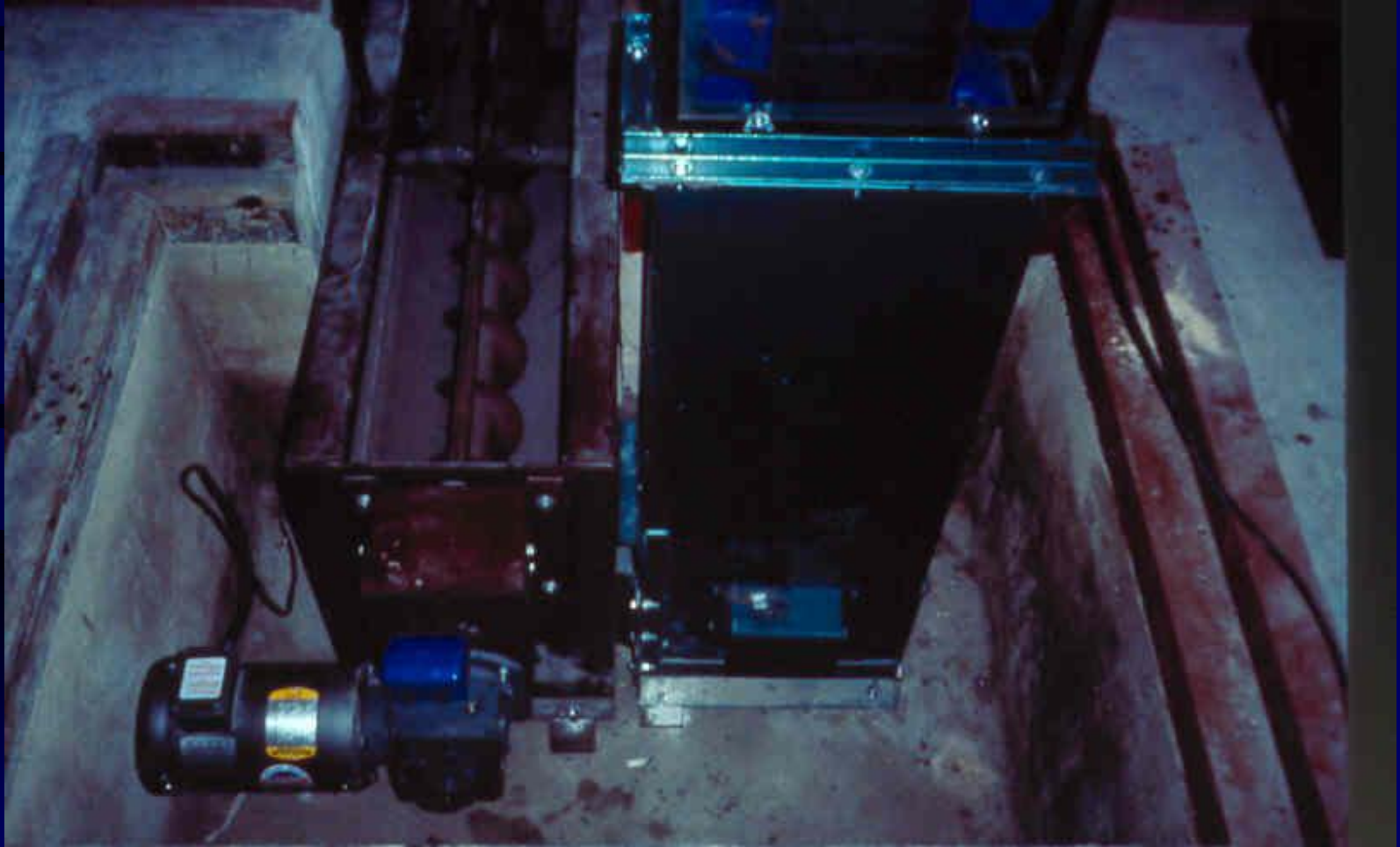
FLAT-TRAK



FLAT-TRAK



Bucket Elevator



Underspeed Monitor

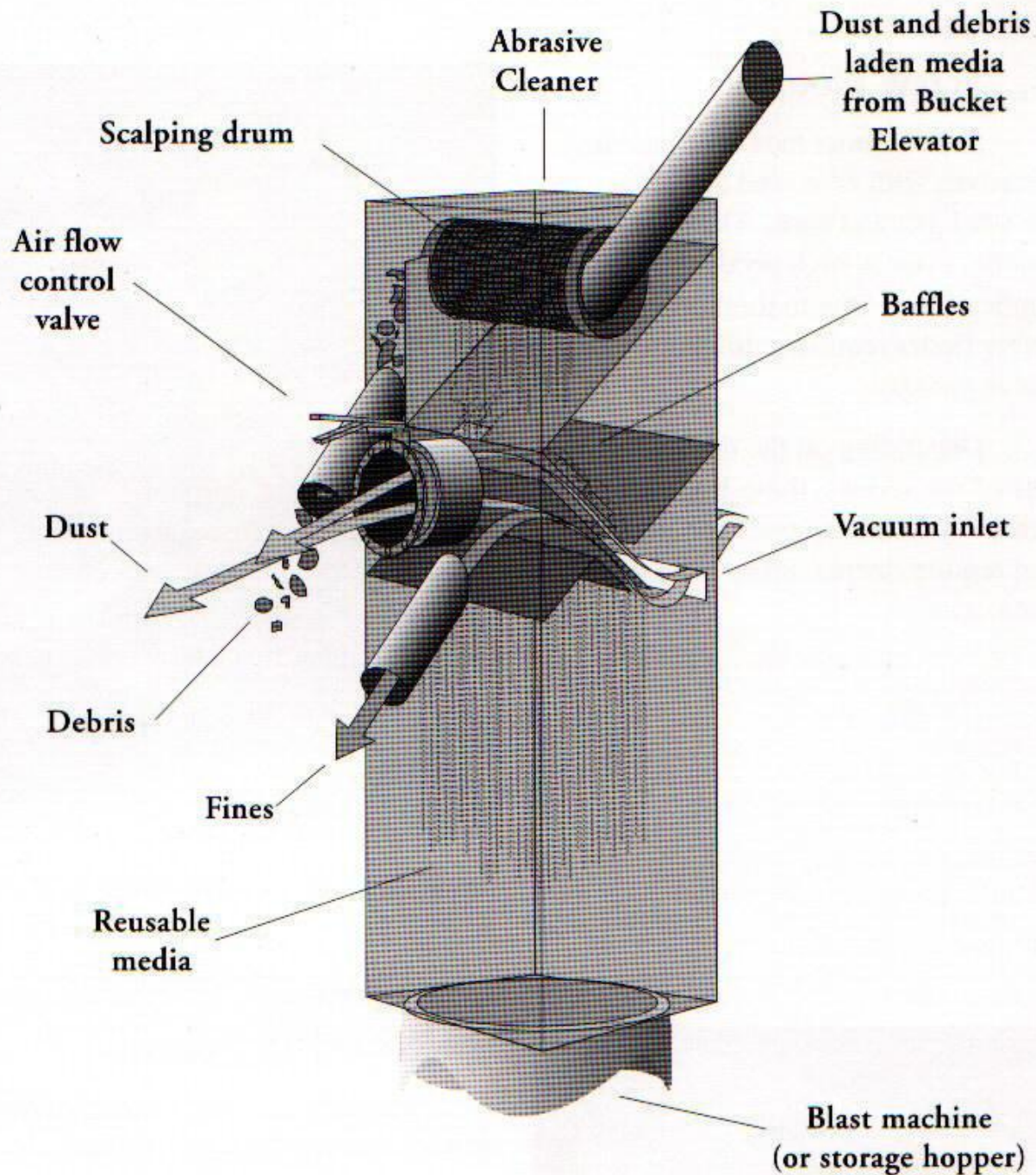
- Used on all bucket elevators
- Prevents belt breakage



MEDIA CLEANING MECHANICAL SYSTEMS

- ABRASIVE CLEANER
 - BEST FOR HEAVIER MEDIA, I.E. STEEL GRIT
 - ROTARY SCALPING DRUM
 - REMOVES OVERSIZED PARTICLES / DEBRIS
 - HIGH VOLUME STREAM OF AIR
 - REMOVES DUST --- TO DUST COLLECTOR
 - INCLUDES 10 CUBIC FOOT STORAGE HOPPER
 - CAN PROCESS UP TO 15 TONS PER HOUR
 - CAN FEED 1, 2, 3, OR 4 BLAST MACHINES
 - MULTIPLE POT STAND REQUIRED FOR MORE THAN ONE BLAST MACHINE

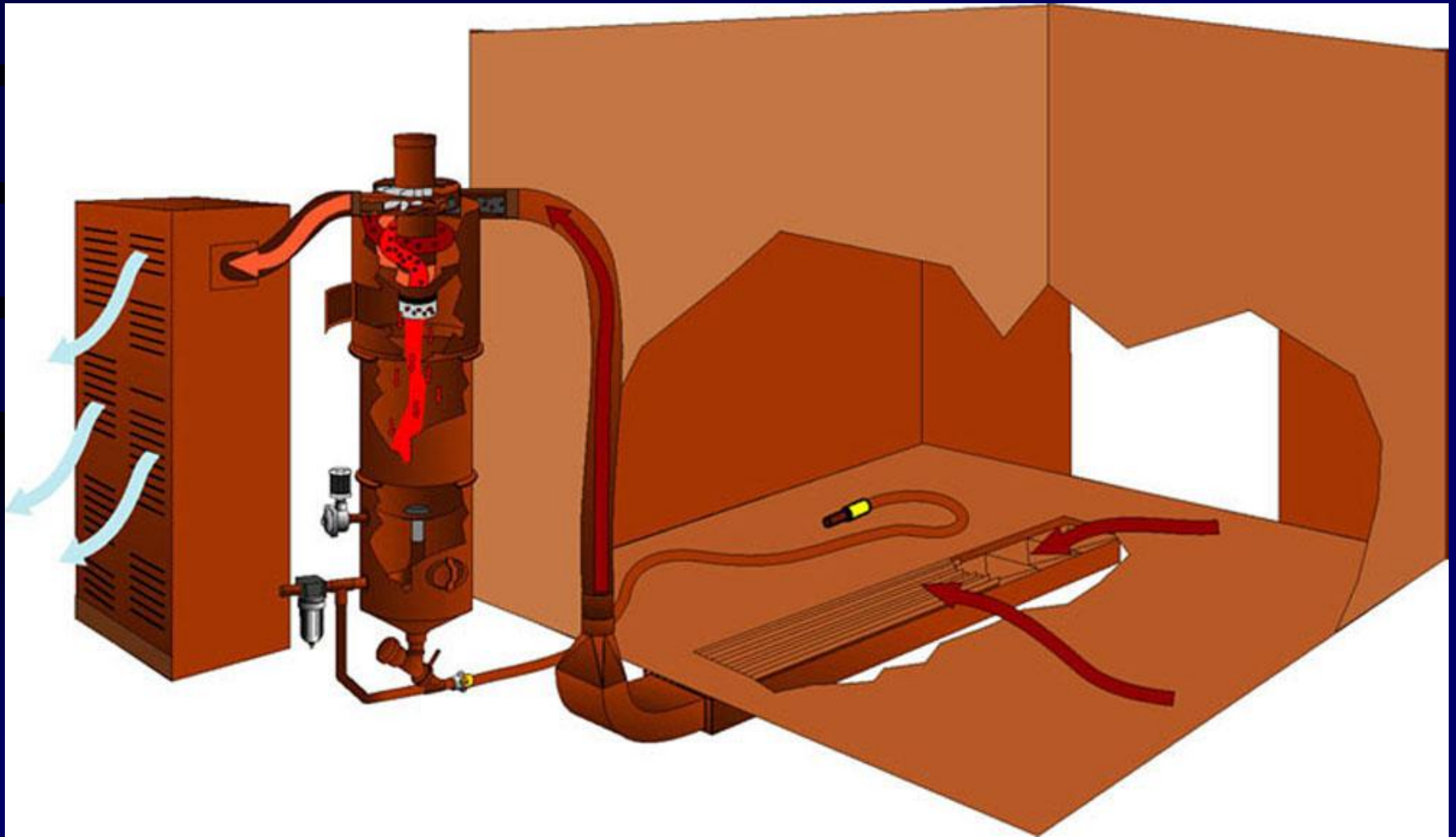
ABRASIVE CLEANER



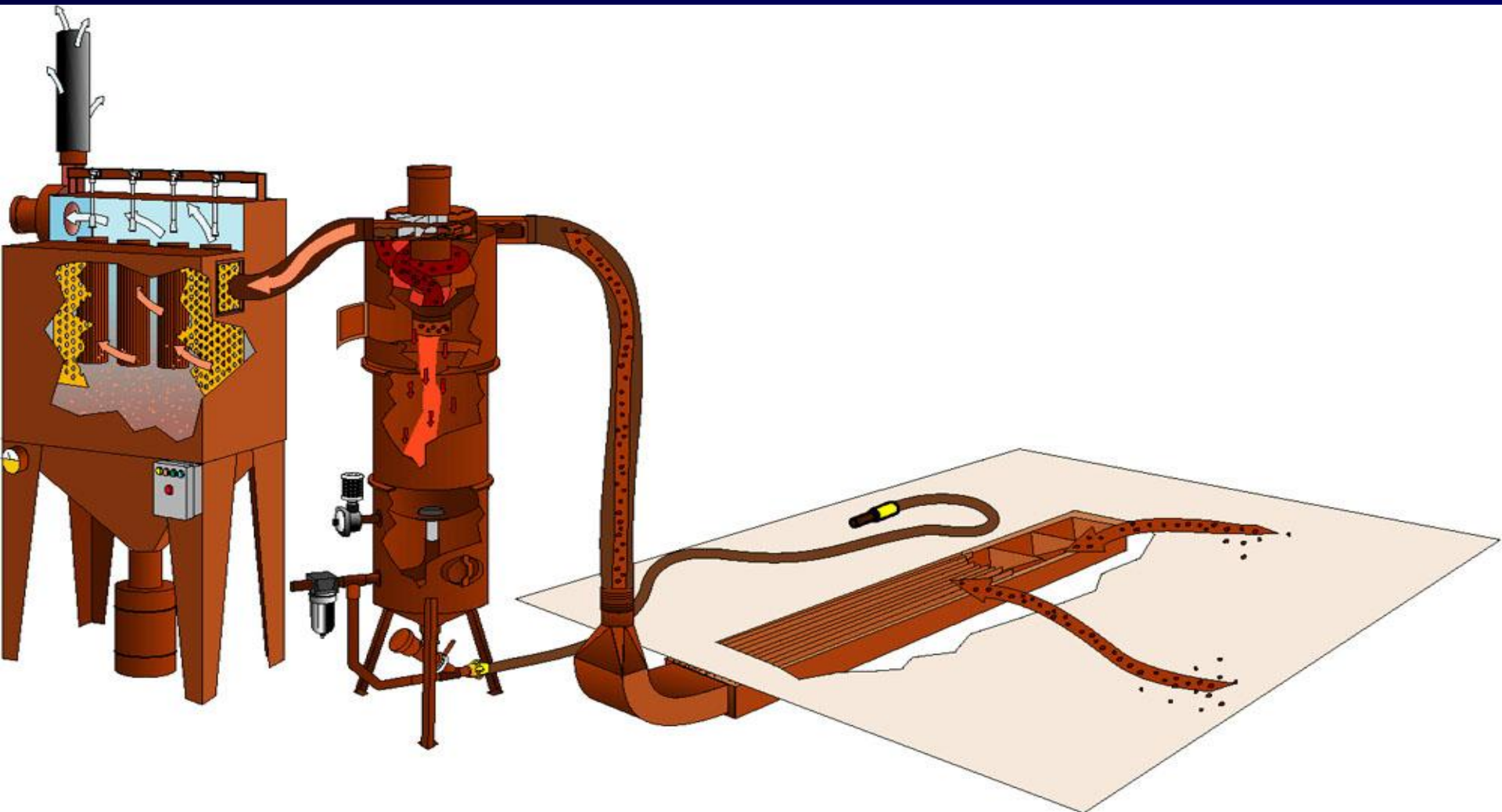
M-Section

- Pneumatically operated channels
- No vibration or screw conveyors
- Handles all light-weight media

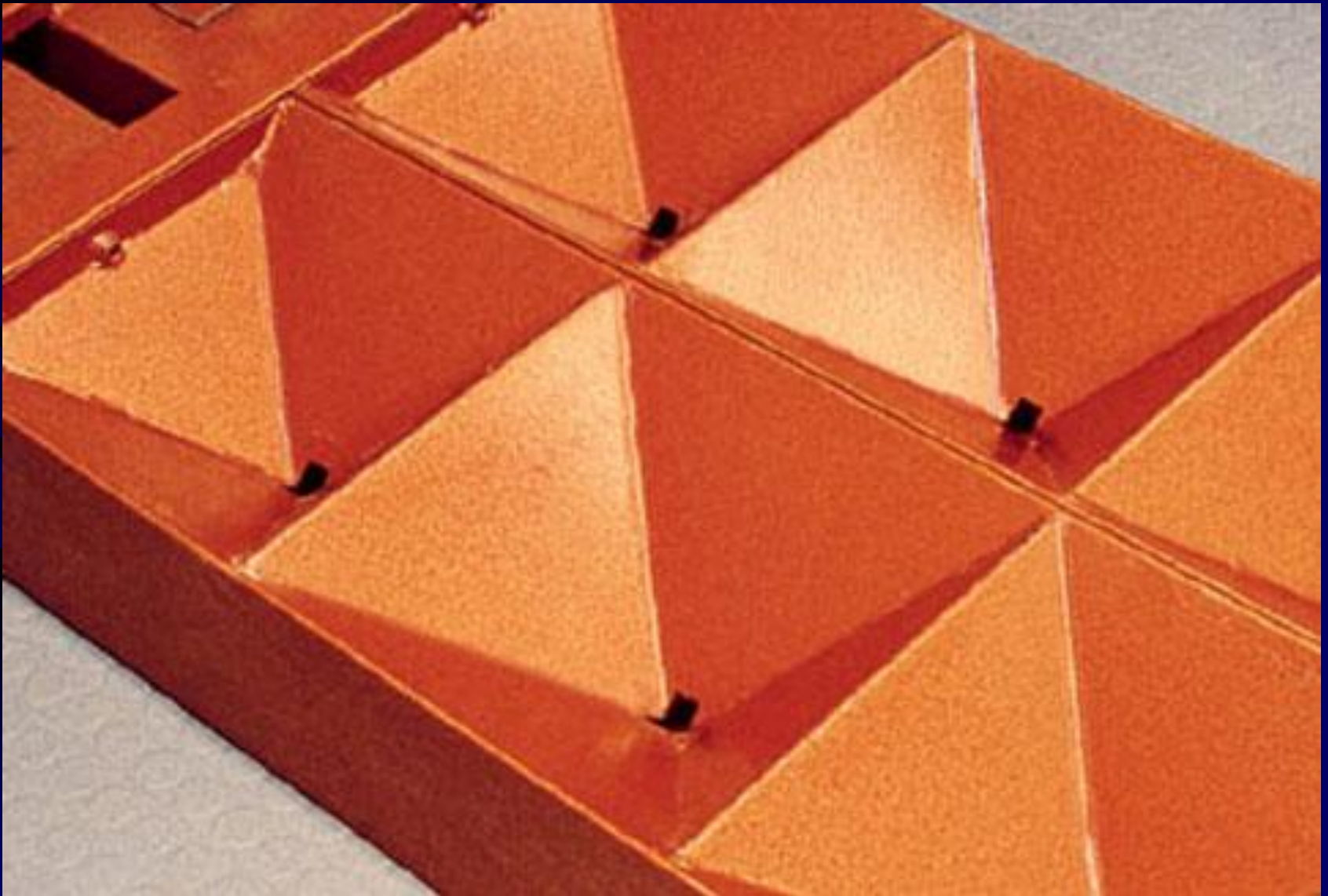
SWEEP-IN M-SECTION WITH DRY FILTER



SWEEP-IN M-SECTION WITH RP COLLECTOR

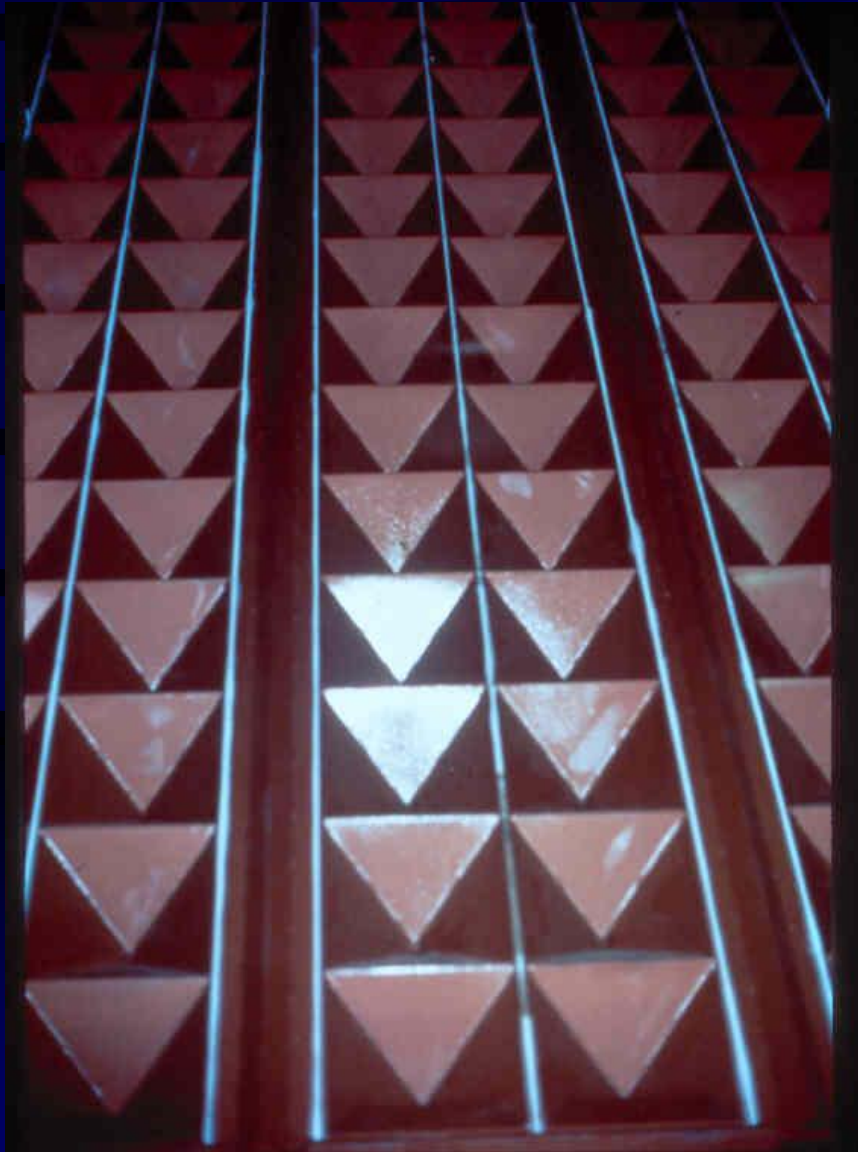


M-SECTION

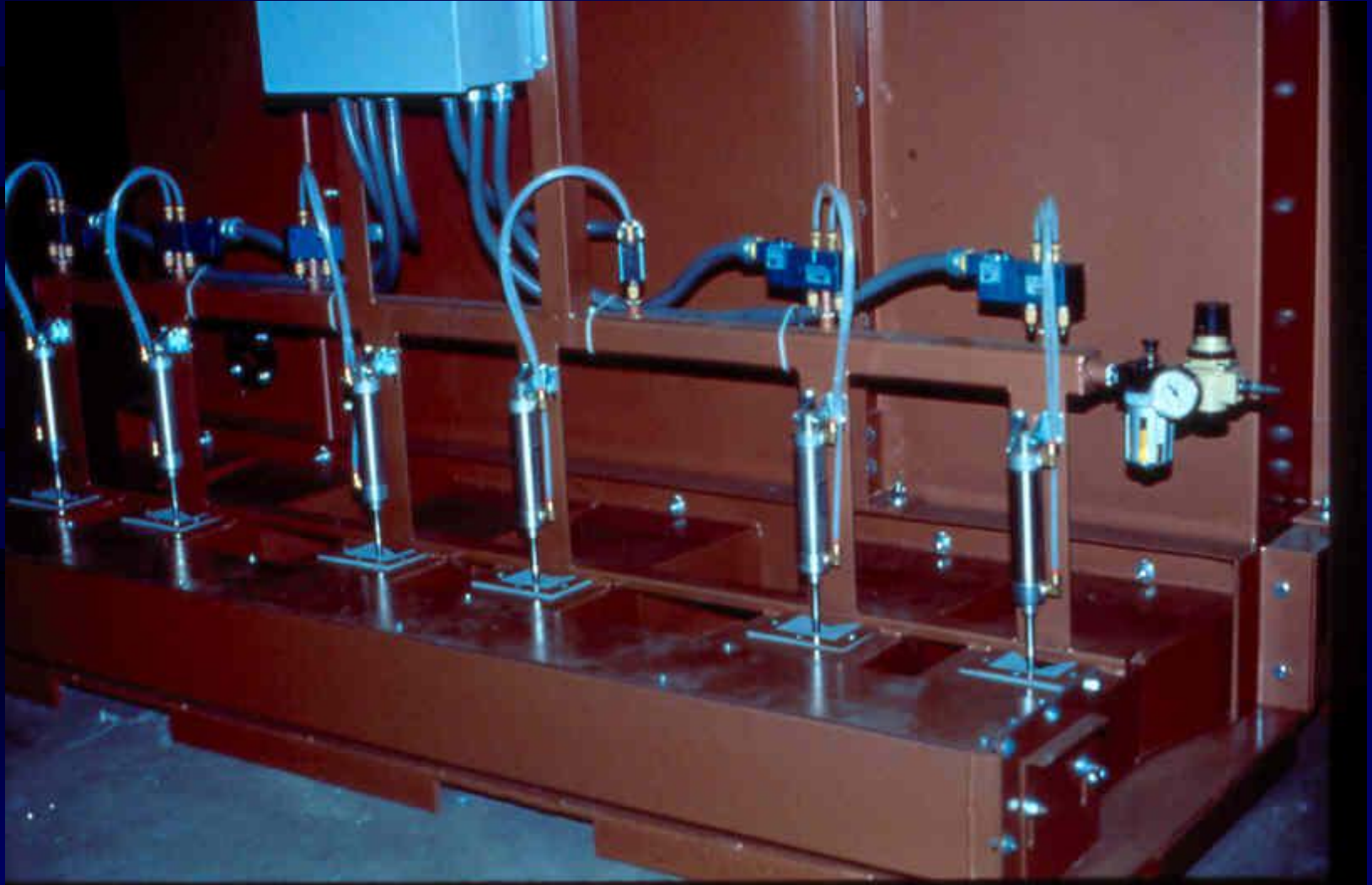


M-section Floor

- Full recovery system



Crossdraft Transition



RECLAIMER

PNEUMATIC SYSTEMS

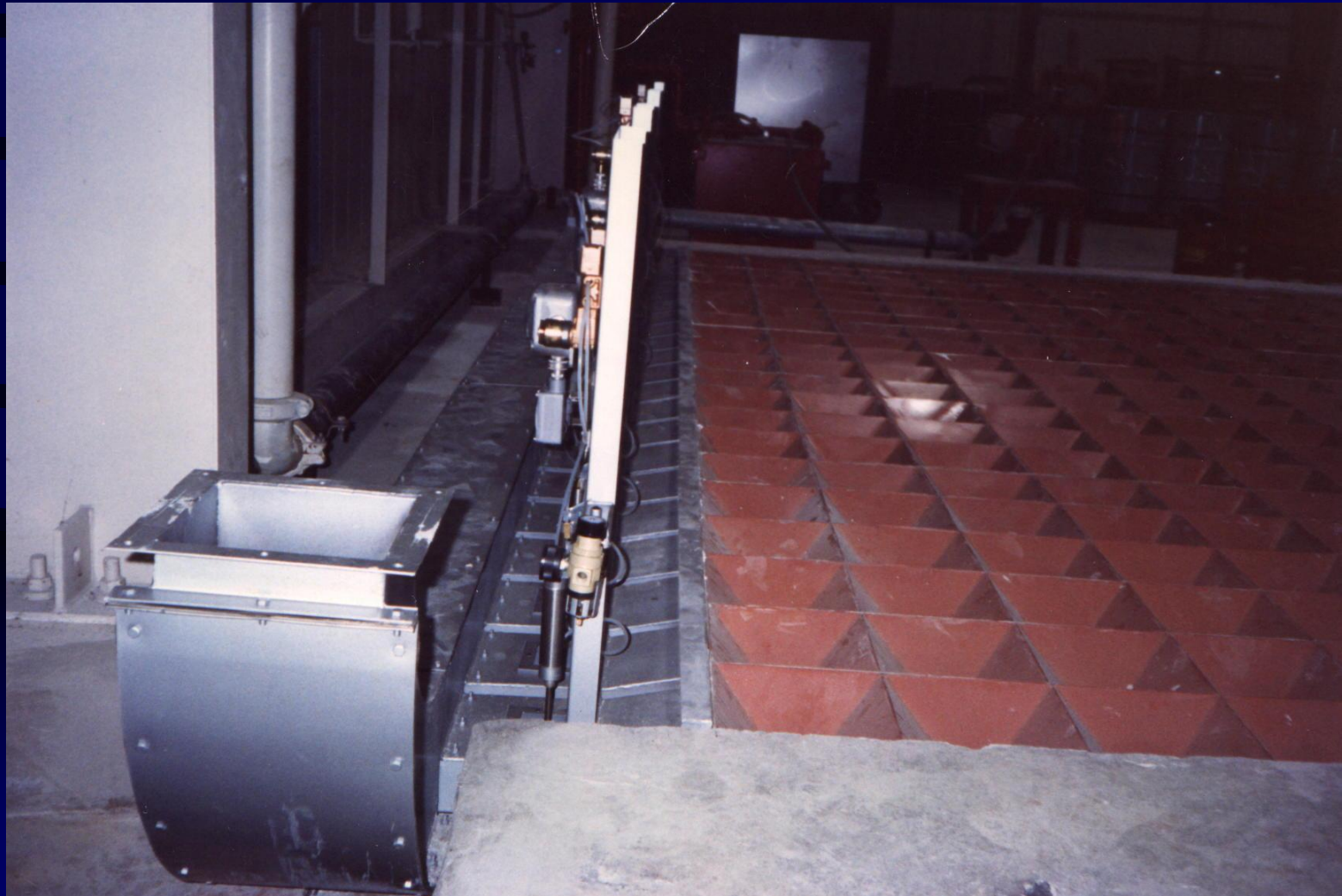
- CYCLONE SEPARATOR FOR USE WITH LIGHTWEIGHT MEDIA
- MEDIA, DUST, AND DEBRIS ENTER RECLAIMER WHERE THEY SPIN
- DUST, FINES, AND BROKEN MEDIA ARE DRAWN OUT WITH EXHAUST AIR TO DUST COLLECTOR
- ONLY CLEAN, REUSABLE MEDIA ENTERS BLAST MACHINE
- RUBBER-LINED TOP SECTIONS ARE NEEDED WITH AGGRESSIVE MEDIA

Blast & Reclaim System

- Reclaim
- Storage Hopper
- Blast Machine



M-SECTION RECOVERY & TRANSITION



M-SECTION FULL-FLOOR

(note wall sheeting for improved illumination)



PRE-ASSEMBLED BLAST ROOMS

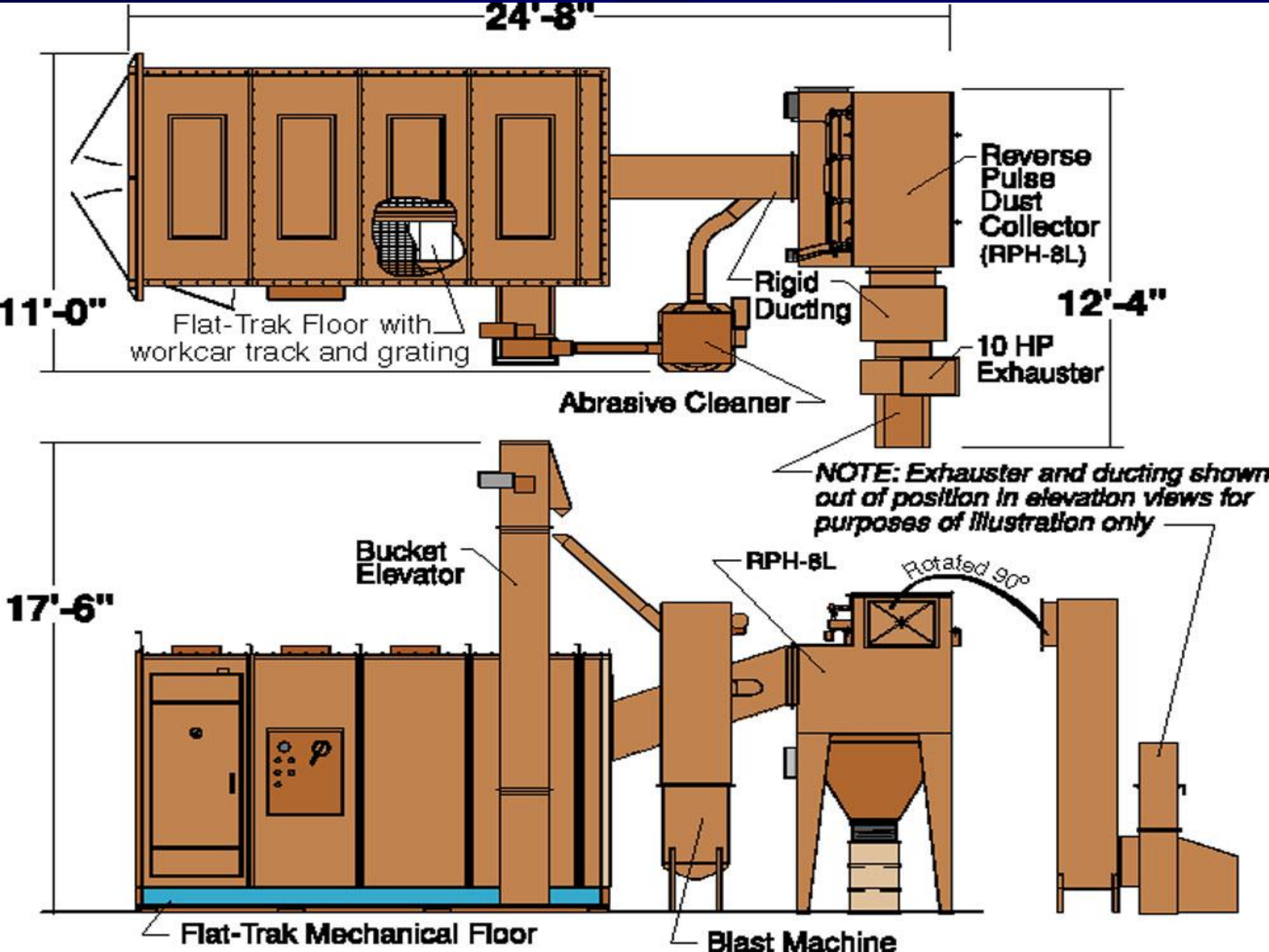
- AVAILABLE FOR ALL TYPES OF RECYCLABLE MEDIA
 - FLAT-TRAK RECOVERY SYSTEM WITH ABRASIVE CLEANER FOR USE WITH HEAVY MEDIA, I.E. STEEL GRIT
 - M-SECTION RECOVERY SYSTEM WITH RECLAIMER FOR USE WITH LIGHTWEIGHT MEDIA, I.E. GLASS BEADS OR ALOX

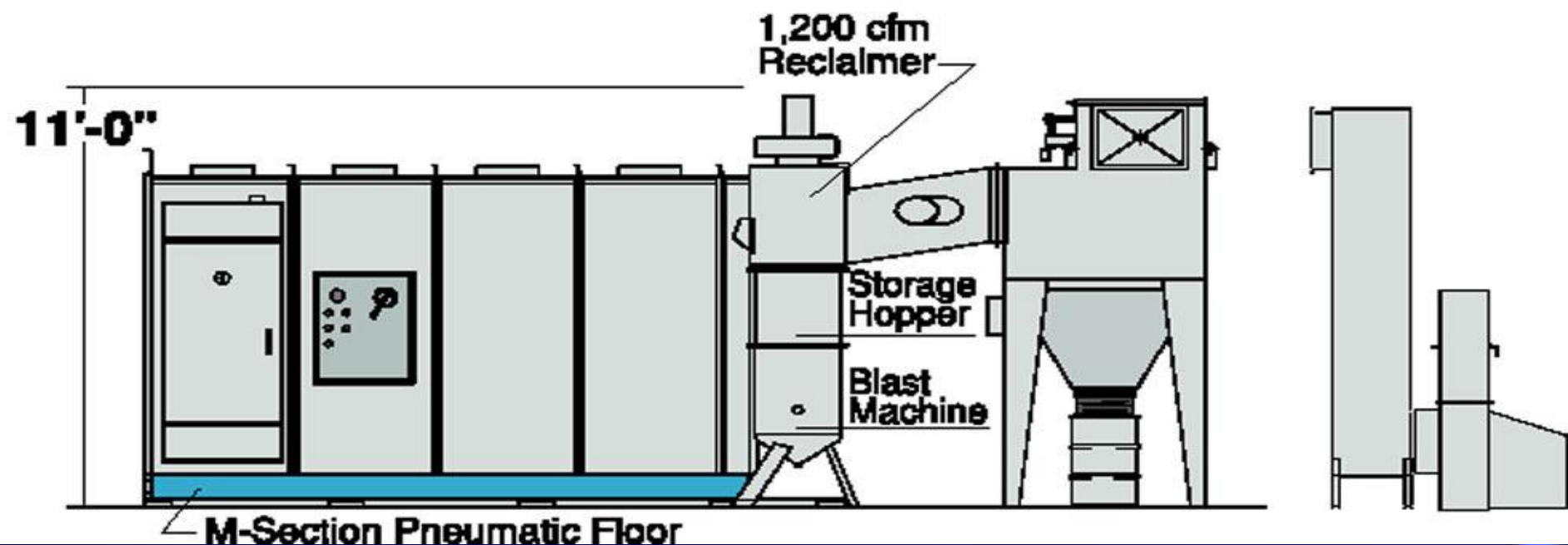
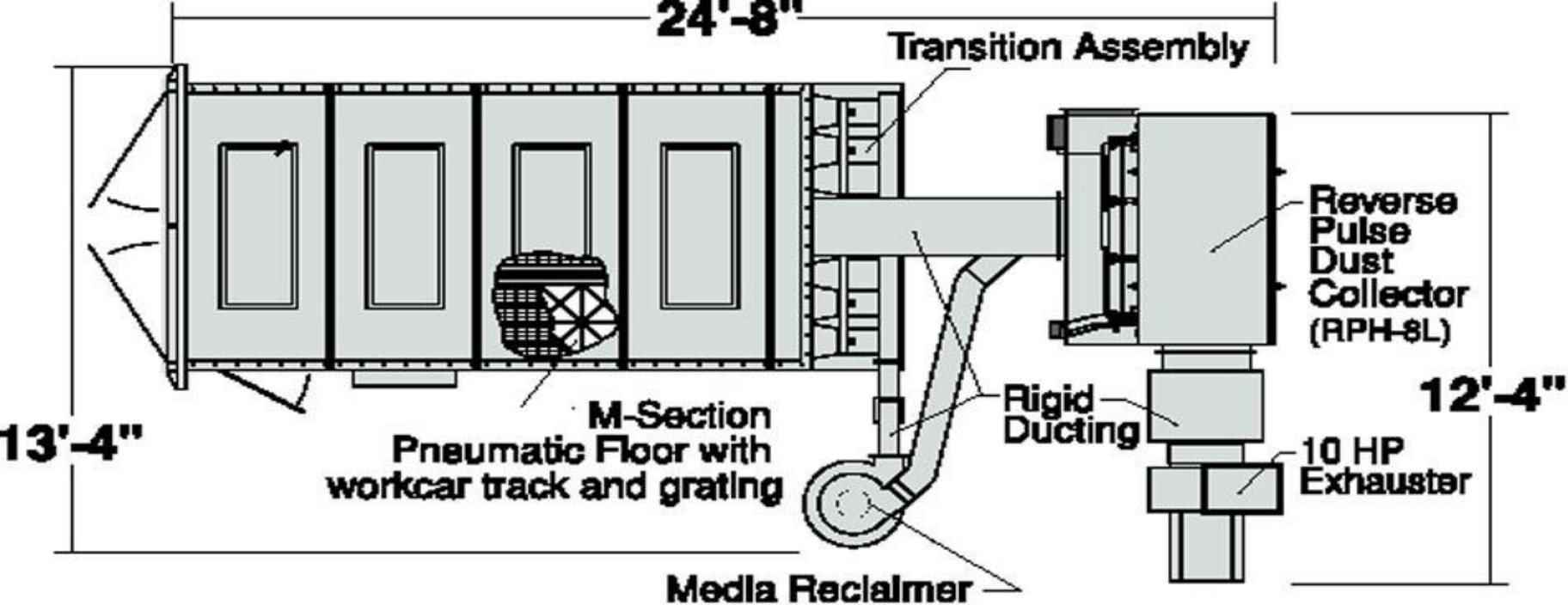
Preassembled Room



Preassembled Room







BLAST MACHINES

- AUTOMATICALLY REFILLED AFTER MEDIA HAS BEEN CLEANED
- MEDIA VALVE(S) MUST BE SUITABLE FOR THE ABRASIVE BEING USED
- BOTTOM CONE MUST ACCOMMODATE ANGLE OF REPOSE OF MEDIA BEING USED
- MUST BE EQUIPPED WITH REMOTE CONTROLS

VENTILATION

- PROVIDED BY DUST COLLECTOR FAN
- INLET VELOCITY: 500 FT/MIN MINIMUM
- CROSSDRAFT VENTILATION RATES
 - 50 FEET/MIN FOR STEEL OR GLASS BEADS
 - 80 FEET/MIN FOR ALUMINUM OXIDE
 - 100 FEET/MIN FOR SAND OR DUSTY MEDIA

VENTILATION

- REVERSE-PULSE CARTRIDGE
 - FILTERS 99.85%
 - EXHAUSTED AIR IS 0.00218 GRAINS/CUBIC FT
 - AIR TO CLOTH RATIO OF 2:1 OR LESS
 - COMPACT, MODULAR UNITS

Dust Collector



- 4000 - 300000 CFM
- Sloped roof
- Modular construction

Dust Collector



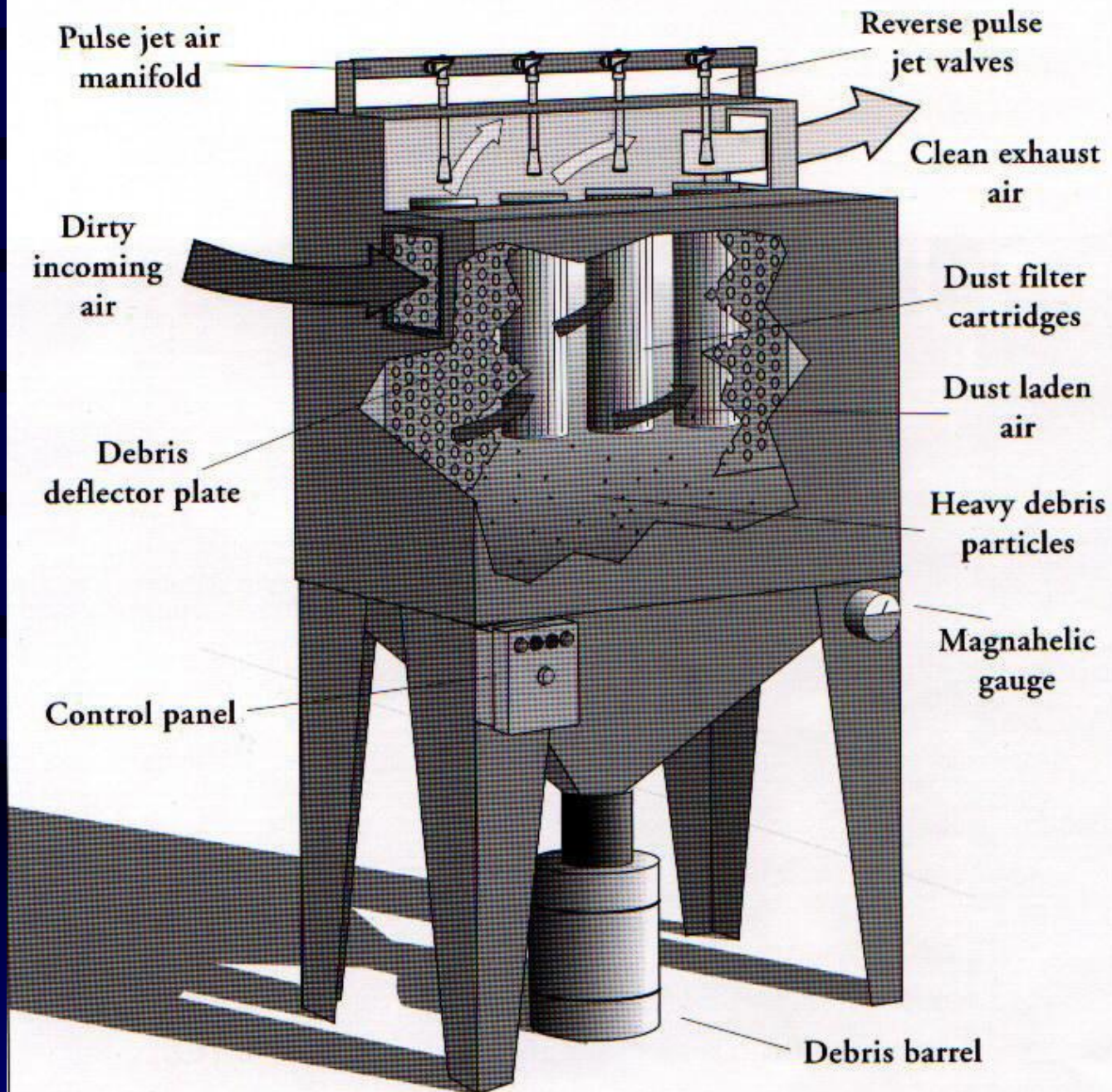
DUST COLLECTION



Dust Collector



- Magnehelic Gauge
- Pressure Gauge



DUST COLLECTION / DUCTING



VENTILATION

- TO DETERMINE THE SIZE OF THE DUST COLLECTOR, USE THIS FORMULA:

CFM of collector = A

$$A = W \times H \times V$$

Room Width = W

Room Height = H

Ventilation Rate = V

For a room 10' x 10' x 20'
with steel grit, we use:

$$A = 10' \times 10' \times 50'/\text{min}$$

$$A = 5000 \text{ CFM}$$

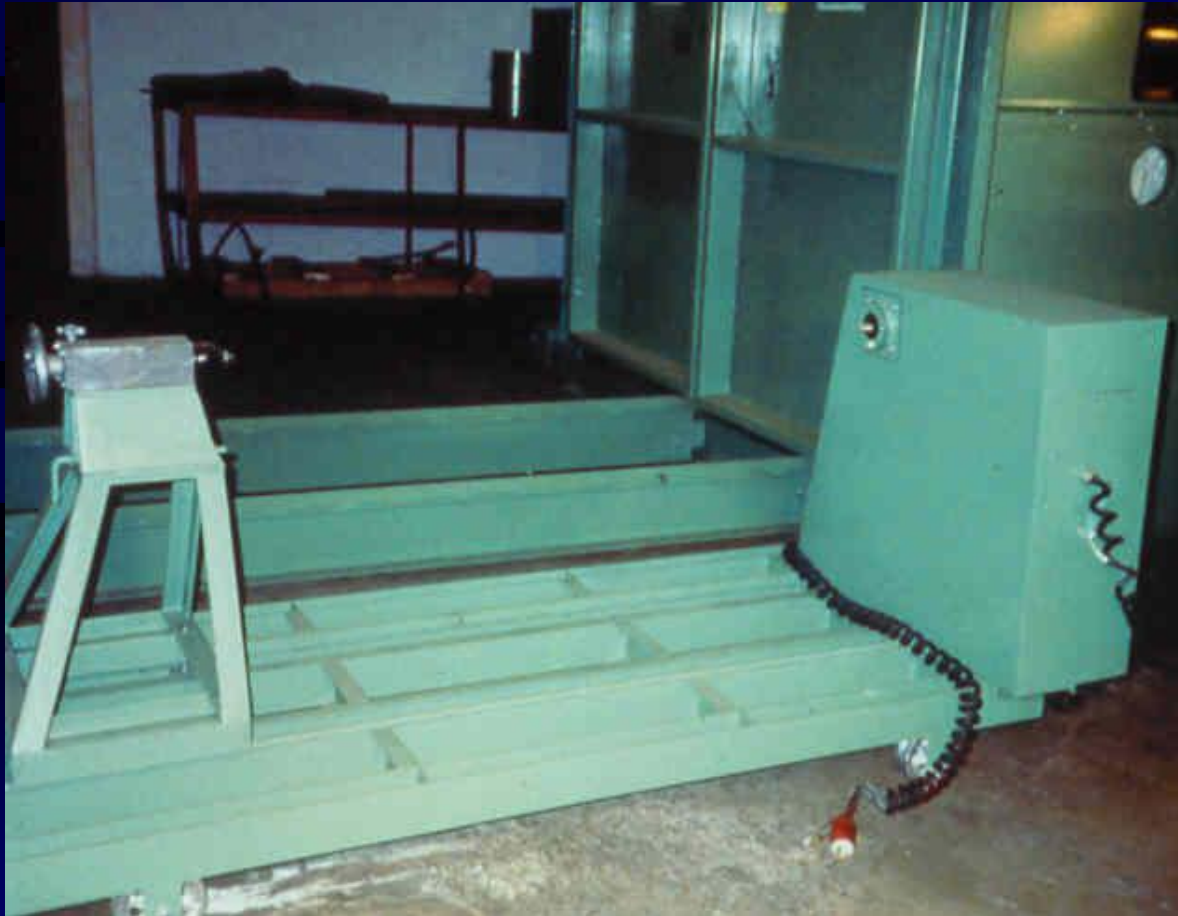
WORK-PIECE HANDLING

- FORKLIFTS
- RAIL-MOUNTED WORK CARS
- OVERHEAD MONORAILS
- EXTERIOR WORK STATIONS
- TURNTABLES
- HORIZONTAL ROTATION DEVICES

OVERHEAD MONORAIL



Workpiece Handling



- Powered horizontal rotation

TURNTABLE/WORKCAR/TRACK





DROP-DOWN TURNTABLE

ELECTRICAL CONTROL PANEL

- INCLUDES MOTOR STARTERS
- AUTOMATED START-UP PROGRAM
 - AVOIDS MEDIA JAMMING AND EQUIPMENT DAMAGE
- HOUR METER MONITORS USAGE
 - AIDS IN SCHEDULED MAINTENANCE TASKS

COMPRESSED AIR SUPPLY

- POWER FOR MANY COMPONENTS
 - AUTOMATED FLOORS
 - REVERSE PULSE COLLECTORS
 - BLASTING OPERATION
 - NOZZLE ORIFICE
 - NUMBER OF OPERATORS
 - SUPPLIED AIR RESPIRATORS
- CONSIDER OTHER DEMANDS ON SHOP AIR

OPERATOR SAFETY EQUIPMENT

- AIR-FED RESPIRATOR
 - APOLLO 60 OR APOLLO 20
- AIR FILTER
 - CPF-20 OR CPF-80
- CO MONITOR AND ALARM
 - CMS-1
- PROTECTIVE CLOTHING
 - BLAST SUITS
- HELMET COMMUNICATION SYSTEMS
 - HCS-1

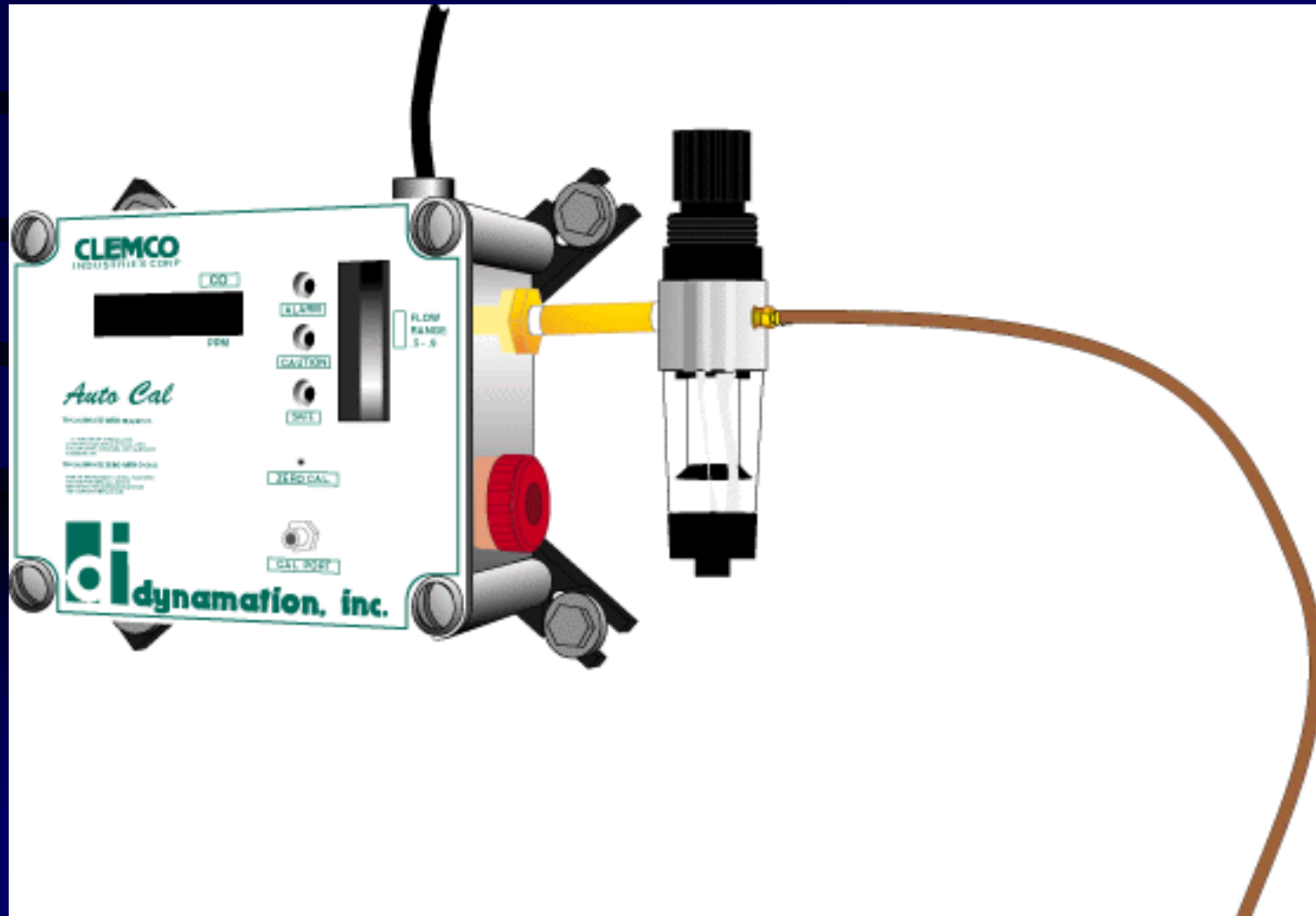
APOLLO 60 RESPIRATOR



CPF-20 BREATHING AIR FILTER



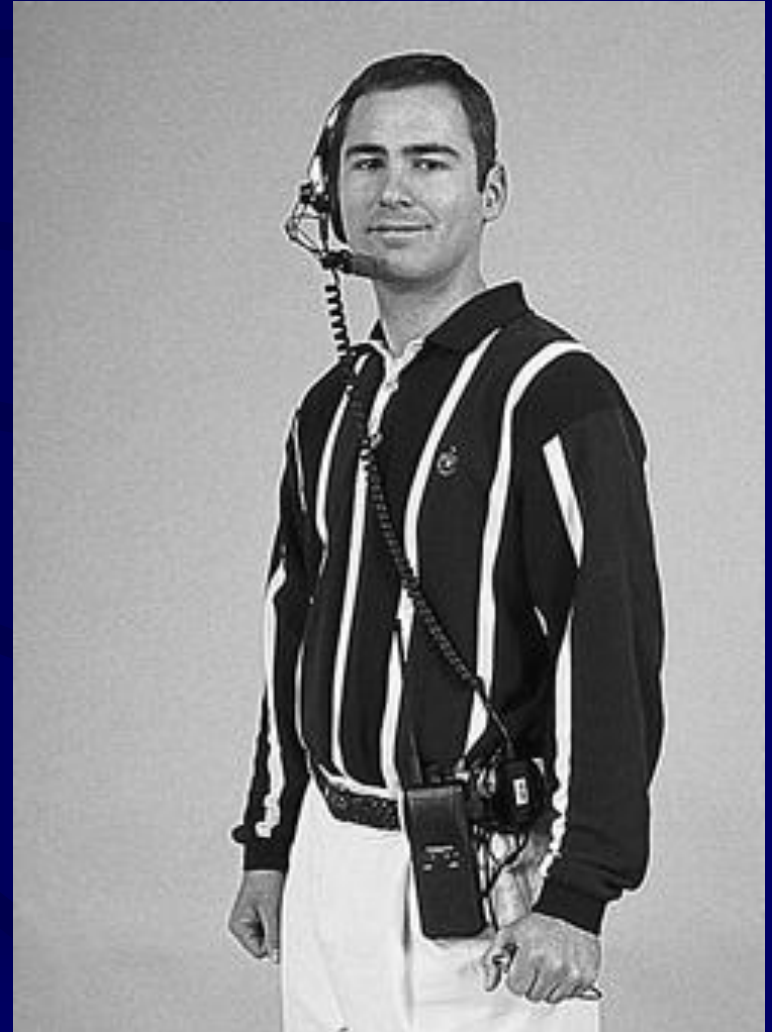
CARBON MONOXIDE MONITOR ALARM



CLEMCO BLAST SUIT

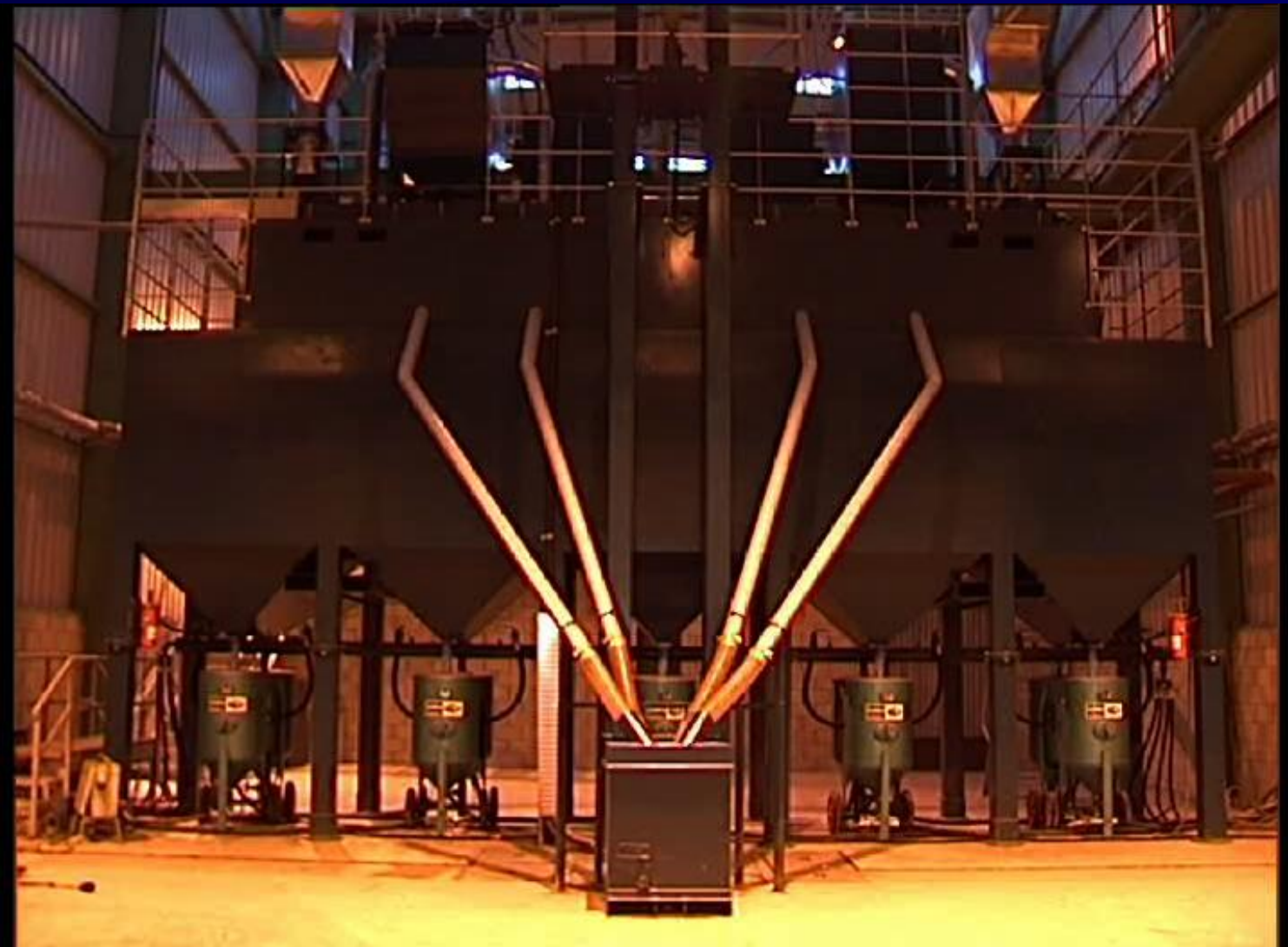


HELMET COMMUNICATIONS



BLAST & PAINT ROOM





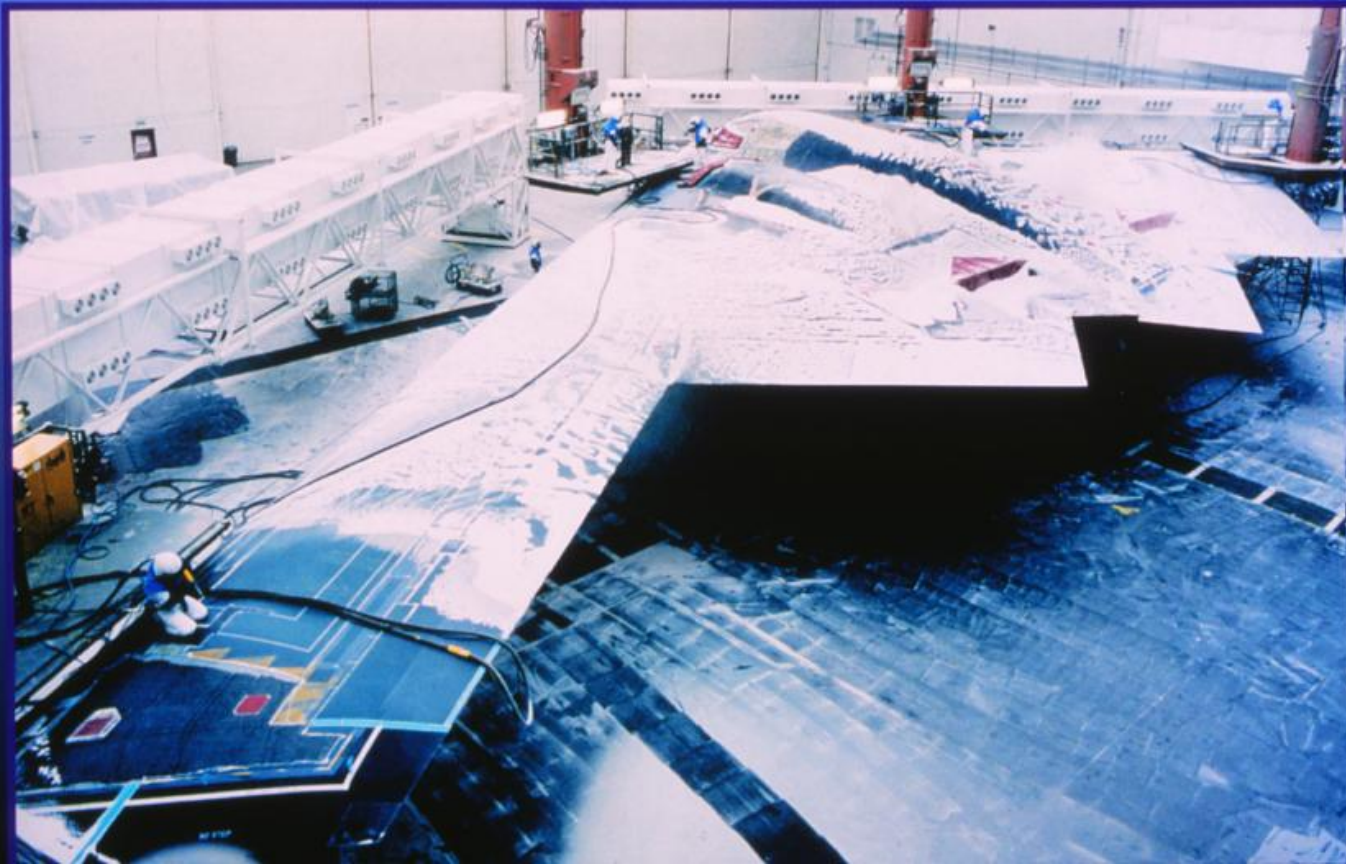




AIRCRAFT STRIP BOOTHS



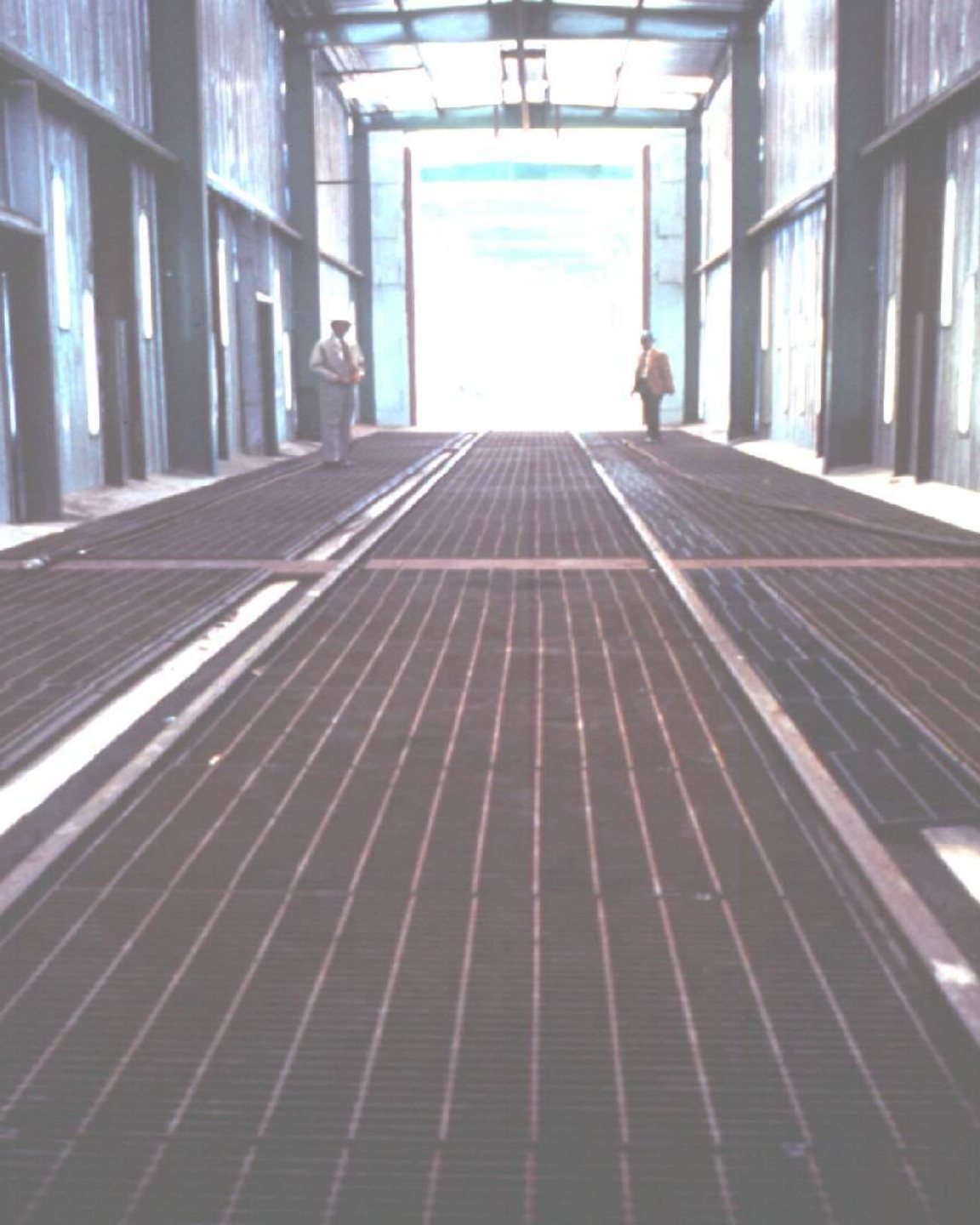






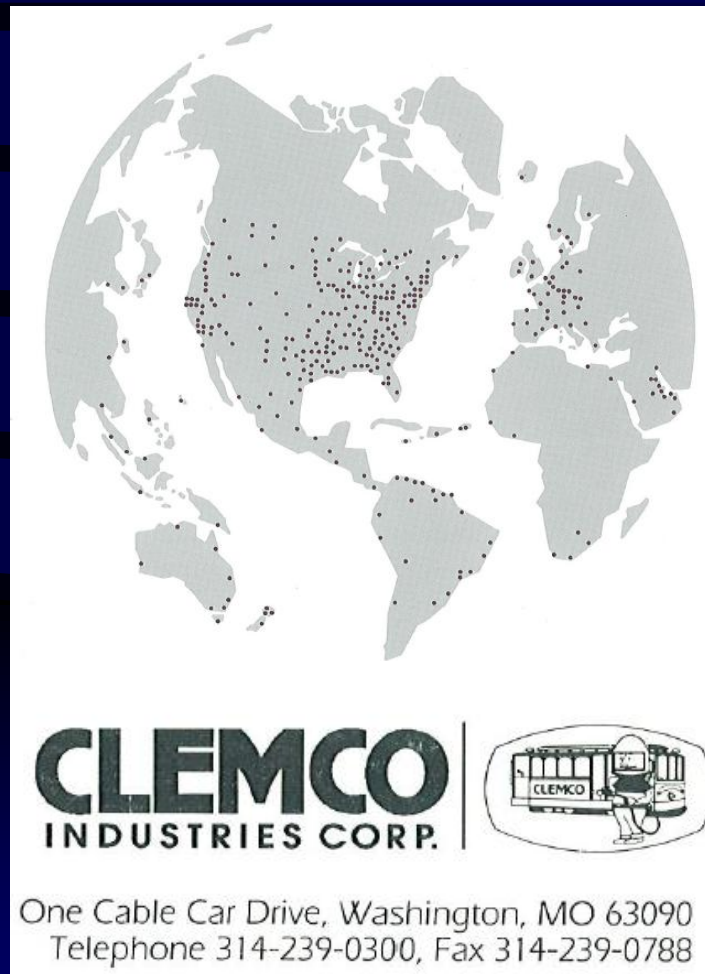
MEDIUM SIZED & SMALL BOOTHS





Thank you

CLEMCO WORLDWIDE



The demand for abrasive blasting is extensive. Ship building and maintenance in Singapore, construction in Saudi Arabia, refining in Houston... these are but a few of the major industries where abrasive blasting has kept pace with demand calling for Clemco specialization and innovation. Manufacturing and distribution throughout 6 continents... wherever there is industry, Clemco is there.