The TYMCO Experience

TYMCO®
REGENERATIVE AIR SWEEPERS

Engineered and Built in Waco, Texas, USA

Our Roots & History

Original Young “Air-Flo” Truck Mounted Regenerative Air Sweeper – 1966

1964
TYMCO was setup as a division of Young Brothers Construction

Young Slurry Seal Machine – 1964

Early TYMCO Regenerative Air Sweeper – 1969

1971
Mr. B.W. Young incorporated and federally registered TYMCO – **T**he **Y**oung **M**anufacturing **CO**mpany

REGENERATIVE AIR SYSTEMS
TYMCO
WACO, TEXAS

1973
When Mr. Young passed, Mrs. Sophie Young, his wife, became President.

1980s
Began developing training videos for all street sweeper models, at no charge, for customers

1981
First started contract sweeping for the City of Waco

THE EARLY YEARS

The first air sweeper was actually developed to meet a need in the road construction industry by the late Mr. B.W. Young of Young Brothers Construction of Waco, Texas. Mr. Young held several patents in the road construction and compaction industries. He developed the air sweeper for the demands of yet another of his inventions — a truck mounted process of coating asphalt with a layer of emulsified asphalt called "Slurry Seal". Slurry Seal, which repaired broken pavement and restored the appearance of old asphalt, required a clean surface to effectively bond with the existing asphalt. Conventional broom sweepers, which only swept the dirt and debris into cracks in the roadway, were costly to maintain and stayed in the shop much of the time.

Mr. Young's revolutionary concept was to use a truck mounted air compressor to blast the roadway surface clean. Since the surface had to remain clean after the truck had passed, Mr. Young developed the idea of a regenerative air system that captured the dirt and debris in the hopper and reused only centrifugally cleaned air to restart the closed loop sweep cycle.

Mr. Young's excitement grew with the success of his Regenerative Air System. Realizing the positive environmental effect of his Regenerative Air System, Mr. Young envisioned multiple applications for improving the existing technology of cleaning streets and paved areas. His vision changed the sweeper market forever.

1984
Concept for Dustless Sweeping Technology (DST) began

1984
Develops Liquefied Petroleum Gas (LPG) powered sweeper

1992
Develops Compressed Natural Gas (CNG) powered sweeper

Mid-1980s
Develops High Speed Performance (HSP) sweeper for U.S. Military Requirements

Early 2000s
Develops Model 500x high side dump sweeper for high dump applications

2011
Introduces Model 210h single engine parking lot sweeper

Today
TYMCO employs more than 150 people in a state-of-the-art, 150,000(+) square foot facility in Waco, Texas

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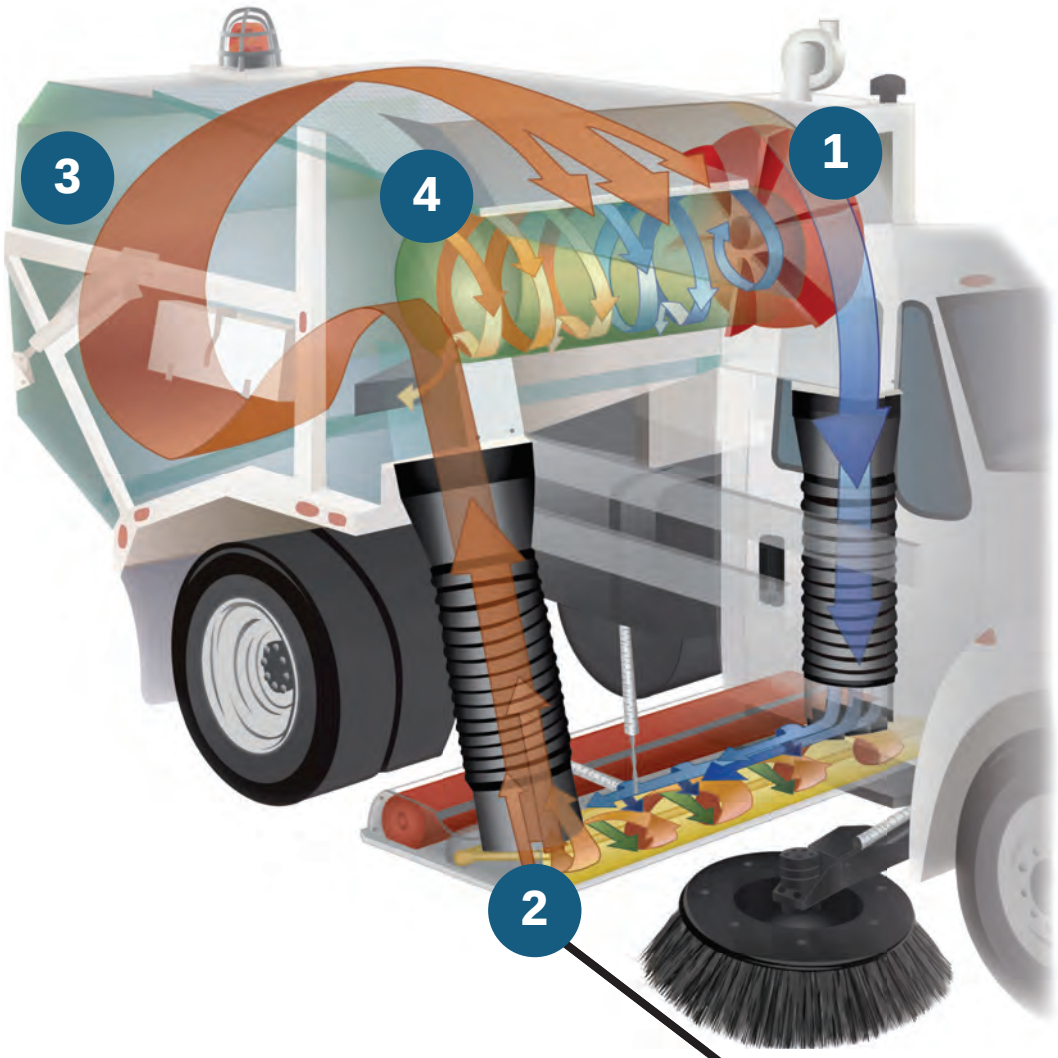
The Regenerative Air System



HOW IT WORKS

1. The closed-loop Regenerative Air System uses the force of a high velocity controlled jet of air created by the blower wheel.

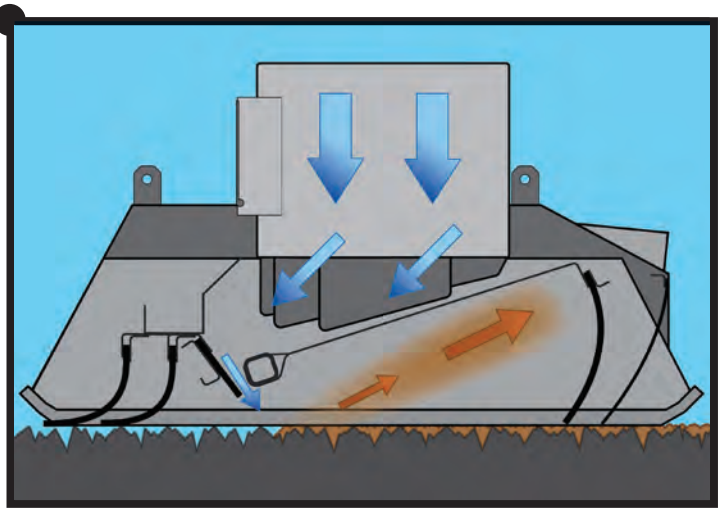
2. This jet of air blasts down and across the pick-up head onto the pavement and into the cracks forcing up into the air stream packed-on heavy debris as well as fine dust particles.

3. The debris laden air stream is pulled into the large hopper, where the air loses velocity and the larger debris falls to the bottom. A screen at the top of the hopper prevents items such as paper, cans and rocks from leaving the hopper and entering the centrifugal dust separator.

4. The patented centrifugal dust separator spins the air along the curved wall of the chamber until the micron size dust particles are skimmed off into the hopper. Only clean air is returned to the blower to start the Regenerative Air cycle again. This closed-loop system means dirty air is NOT exhausted into the environment only to settle on the surface again.

TRUE REGENERATIVE AIR

- Two chamber pick-up head with a blast orifice for cleaning with an air-blast
- Closed-loop system with a cylindrical, multi-pass centrifugal dust separator for reduced abrasion and additional dust suppression



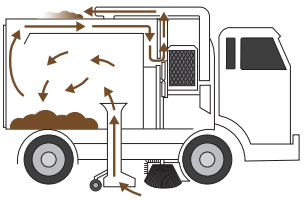
TYMCO REGENERATIVE AIR SWEEPERS

TYMCO Regenerative Air Sweepers use a controlled blast of air to dislodge debris from paved surfaces in combination with a vacuum to remove light trash, heavy dirt and fine dust. The full truck-width, floating pick-up head is designed to adjust to curvatures and irregularities of pavement for optimum pick-up.

- Debris is routed up a large diameter, heavy-duty suction hose.
- TYMCO Regenerative Air Sweepers DO NOT require a constantly moving main broom, as do both broom and vacuum sweepers.

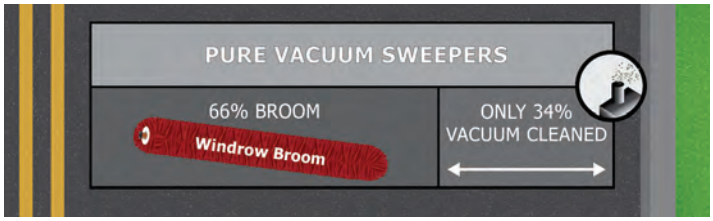
- TYMCO Regenerative Air is a closed-loop system with a cylindrical, multi-pass centrifugal dust separator designed to NOT exhaust potentially polluted air into the atmosphere, unlike a vacuum sweeper.

PURE VACUUM SWEEPERS



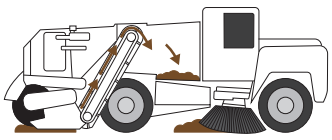
Pure vacuum sweepers utilize a constantly moving windrow broom (approx. 66% truck width) to transfer debris over to a suction nozzle at one side of the sweeper. Only the area beneath the nozzle is vacuumed and the area swept by the windrow broom can push particulates into pavement cracks.

- Debris is routed up a small diameter suction hose.
- The windrow broom needs to be replaced about every 80-100 hours of operation, costing thousands over the life of the sweeper.



- By design, pure vacuum sweepers exhaust air potentially filled with dust particulates into the atmosphere, requiring the use of more water for minimal dust control.

MECHANICAL BROOM SWEEPERS



Mechanical broom sweepers utilize a constantly moving main broom to transfer debris up an elevator or belt. The main broom can remove some large debris, but leaves dust particulates on paved surfaces and in pavement cracks.

- Broom sweepers use combinations of elevators, belts, squeegees and conveyors which has many moving parts, introducing more opportunities for failures and in many cases, multiple grease points that need to be serviced frequently.

- Main brooms need to be replaced about every 200 hours of operation, costing thousands over the life of the sweeper.
- By design, main brooms agitate pavement surfaces to “sweep” debris and in the process, generate more airborne dust requiring the use of more water for minimal dust control.

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Environmental Benefits of Sweeping

WHY SWEEP?

- Stormwater Runoff Quality
- Air Quality
- Cleanliness & Aesthetics
- Human Health
- Wildlife Protection
- Environmental Regulation
- Infrastructure Protection
- Improved Drainage

WHERE DOES DIRT AND DEBRIS ON PAVED SURFACES COME FROM?

- Soil & Sediment
- Motor Vehicles
- Construction/Demolition Debris
- Industrial Emissions
- Litter
- Animals

WHAT CONTAMINANTS CAN BE FOUND IN THE MATERIAL PICKED UP BY SWEEPERS?

- **Metals** – From vehicle wear / fluids, brake dust, weathering of structures, and crustal materials.
- **Organics** – Polycyclic aromatic hydrocarbons (PAHs), phthalates, and pesticides. From sources such as vehicle fluids, vegetation, combustion, plastics, and motor oil.
- **Nutrients** – Nitrogen and phosphorus from fertilizer, yard waste, vegetation, and animal waste.
- **Pathogens** – Bacteria and viruses from animal waste and decaying carcasses.

WHAT WATER QUALITY REGULATIONS MOST AFFECT THE SWEEPING INDUSTRY?

Under the National Pollutant Discharge Elimination System (NPDES), Municipal Separate Storm Sewer System (MS4) permittees are required to outline and follow minimum control measures, also known as Best Management Practices (BMPs), which include Pollution Prevention/Good Housekeeping practices, such as sweeping.

WHAT AIR QUALITY REGULATIONS AFFECT THE SWEEPING INDUSTRY?

The Clean Air Act of 1970 (Amendments in 1977 and 1990) was the first major air pollution control act and set National Ambient Air Quality Standards (NAAQS) for six common "criteria pollutants" including Particulate Matter (PM_{10} & $PM_{2.5}$):

- PM_{10} is respirable PM that is 10 micrometers (µm) or smaller in diameter. This is about 1/10 the diameter of a human hair.
- $PM_{2.5}$ is respirable PM that is 2.5 µm or smaller in diameter. It is about 1/24 the diameter of a human hair.
- PM implies no chemistry, but can be made up of a number of pollutants.

WHAT PERFORMANCE ACHIEVEMENTS MAKE SWEEPERS ENVIRONMENTALLY CONSCIOUS?

- The South Coast Air Quality Management District (SCAQMD) in Southern California requires sweepers to be certified by their Rule 1186, which states sweepers must pick up 80% of test material (90% sand and 10% paint filler), and use control measures such as water spray and/or baffle curtains to minimize dust emissions.
- SCAQMD Rule 1186.1 requires alternative fuel powered sweepers, such as compressed natural gas (CNG) and liquefied propane gas (LPG).

Environmental Technology Verification (ETV) ISO 14034

- PM_{10} & $PM_{2.5}$ Street Sweeper Efficiency
  1. Measures sweeper pick-up efficiency of 270 kg of a calcium carbonate based powder with a mean diameter of about 3 microns
  2. Sweeper deposit on sidewalk
  3. Total concentration of ambient PM_{10}
  4. Maximum concentration of ambient PM_{10}
  5. Total concentration of ambient $PM_{2.5}$
  6. Maximum concentration of ambient $PM_{2.5}$

- Operational On-Street Street Sweeper Efficiency
  1. Measures sweeper pick-up efficiency of 345 kg of test material on a wet paved surface
  2. When maneuvering around parked cars
  3. Leaf collection
  4. Large debris
  5. Heavy debris
  6. Dustless mode operation

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Sweeper Models

PARKING LOT SWEEPERS

Model 210h®

Model 210h

- 2.4 yd³ Hopper
- Container Dump
- Available in Diesel or Gasoline
- Single engine sweeper
- Conventional Cab Chassis

Model 210®

Model 210

- 2.4 yd³ Hopper
- Container Dump
- Available in Diesel or Gasoline
- 56 hp Auxiliary Engine
- Cabover or Conventional Cab Chassis

DUSTLESS SWEEPERS

Model DST-4®

Model DST-4

- 4.0 yd³ Hopper
- Container Dump
- Available in Diesel
- 56 hp Auxiliary Engine
- Cabover Chassis
- Dustless Sweeping Technology with Filtration ≥ 95% of 0.3µm

Model DST-6®

Model DST-6

- 7.3 yd³ Hopper
- Ground Dump
- Available in Diesel
- 99 hp Auxiliary Engine
- Cabover or Conventional Cab Chassis
- Dustless Sweeping Technology with Filtration ≥ 95% of 0.3µm

TYMCO®
REGENERATIVE AIR SWEEPERS

STREET SWEEPERS

Model 435

- 4.0 yd³ Hopper
- Container Dump
- Available in Diesel or Gasoline
- 56 hp Auxiliary Engine
- Cabover or Conventional Cab Chassis

Model 435®

Model 500x

- 5.7 yd³ Hopper
- Variable Dump (Container/Dump Truck)
- Available in Diesel or CNG
- 115 hp Auxiliary Engine
- Conventional Cab or Cabover Chassis

Model 500x®

Model 600

- 7.3 yd³ Hopper
- Ground Dump
- Available in Diesel or CNG
- 99 hp Auxiliary Engine
- Conventional Cab or Cabover Chassis

Model 600®

HIGH SPEED AIRPORT RUNWAY SWEEPER

Model HSP

- 7.3 yd³ Hopper
- Ground Dump
- Available in Diesel
- 99 hp Auxiliary Engine
- Conventional Cab or Cabover Chassis
- High Speed Performance - Sweeps at up to 15 mph

Model HSP®

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Service School

The 3,500 square foot, temperature controlled TYMCO Training Center provides space for demonstrations on an operational sweeper and systems components.

We want you to understand the Regenerative Air System and your TYMCO sweeper completely, so you can get optimal performance from your equipment investment. That's why, for more than forty years, we've offered two-day scheduled service schools at our facility in Waco, Texas. Managers, owners, operators and mechanics get hands-on training and answers to specific questions. Enrollment levels are kept low, so you and your team will get personal attention as well as the opportunity to learn from the experiences of other attendees through the interaction of the class.

When your operators and mechanics are thoroughly trained and knowledgeable about the TYMCO sweeper, you get better performance and a lower cost per operating hour.

Attendees review components of the pick-up head assembly during removal and installation.

Instructor reviews proper maintenance, removal and installation of the blower assembly.

A Service School attendee receives her TYMCO Certificate of Completion.

SERVICE SCHOOL HIGHLIGHTS

- The Regenerative Air System
- Servicing the Blower, Dust Separator and Pick-up Head
- Hydraulic, Electrical and Water System Review
- Rebuild and Repair Small Parts and Components
- Using the BlueLogic® Control System
- Manufacturing Facility Tour
- Certificates of Completion Awarded to Attendees
- 30 Schools Scheduled per Year
- Daily Ground Transportation to and from the hotel
- Lunch is Provided

For more information, to view Service School dates and to register for a class, please visit tymco.com/training

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Sweeper Test Track Facility

TYMCO Sweeper Test Track Facility sits behind the TYMCO manufacturing plant on a 9-acre tract.

TEST TRACK

- Top-of-the-Line facility allows for customer and dealer training for proper operation/demonstrations to “try out” different sweepers
- Design features of test track pose a challenge for sweeping during training as well as testing various sweeper options
- Allows for better control of performance and quality checks when testing sweepers during the manufacturing process
- Areas within test track can simulate various sweeper performance testing procedures such as airport runway tests (Model HSP)
- Tri-oval track with overall length ≈ 2100 ft (0.4 mi)

EQUIPMENT DISPLAY AREA

- Offers covered meeting area for equipment display
- Located next to the cul-de-sac on the test track

MATERIAL STORAGE BUILDING

- Designed for staging various materials used for test sweeping purposes
- Located next to the test track

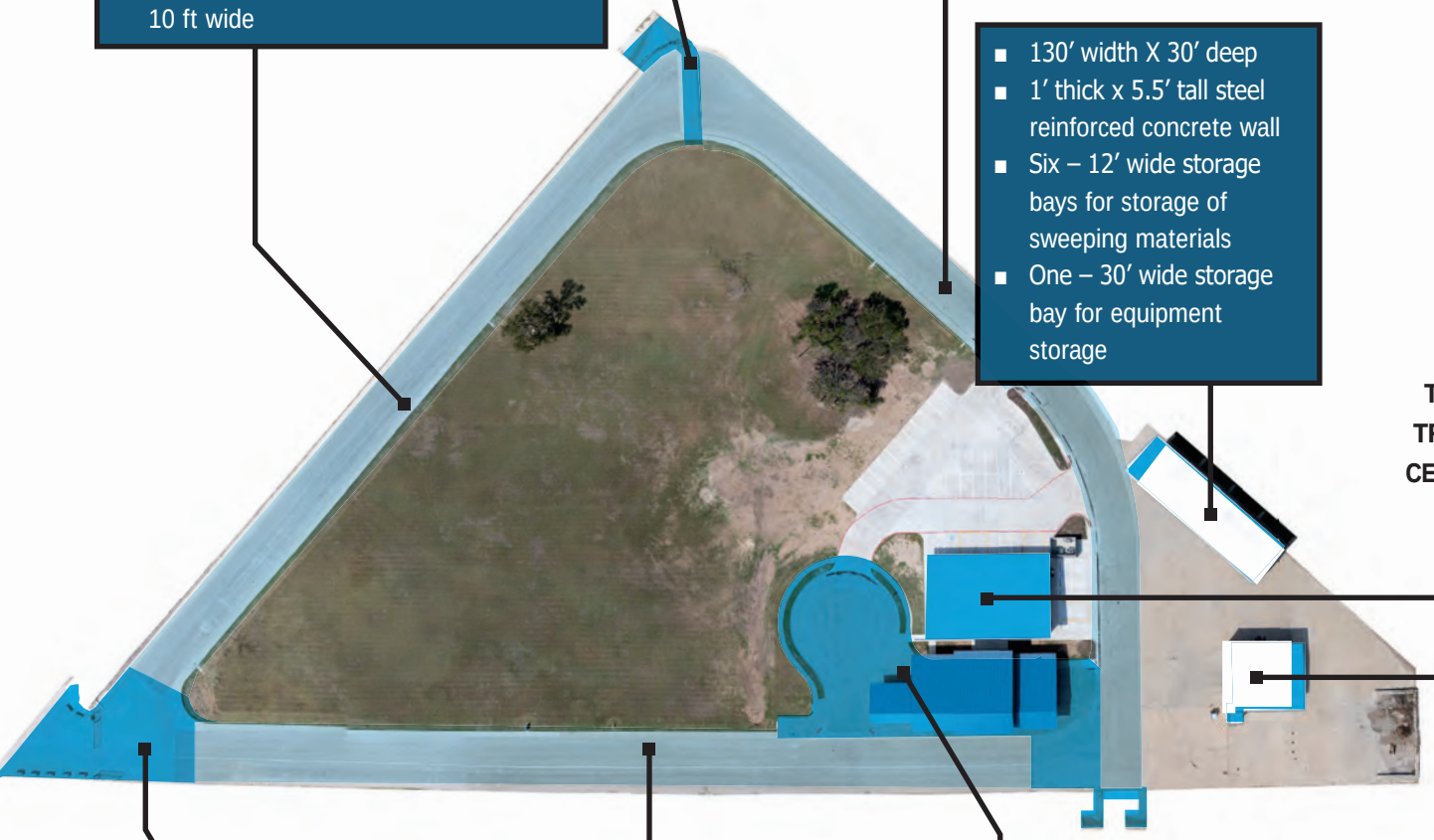
TYMCO®
REGENERATIVE AIR SWEEPERS

- 15 ft wide concrete valley gutter

- 600 ft long road
- 27 ft wide road
- Standard curb and gutter on both sides
- Flexible Base (Crushed Concrete)
- Standard parabolic crown roadway
- Recessed curb stormwater inlet – 10 ft wide

- 650 ft long road
- 30 ft wide road
- Standard and laydown curb and gutter
- Cement Treated Base
- Standard parabolic crown roadway
- (1) 14 ft residential drive approach
- Asphalt overlay/under cut into curb
- 225 ft long x 6 ft wide undercut/milled asphalt on field exterior

- 130′ width X 30′ deep
- 1′ thick x 5.5′ tall steel reinforced concrete wall
- Six – 12′ wide storage bays for storage of sweeping materials
- One – 30′ wide storage bay for equipment storage



TEST TRACK CENTER

SWEEPER WASH FACILITY

- 50 ft wide main entrance
- 30 ft crossover access to TYMCO manufacturing plant

- 650 ft long road
- 40 ft wide road
- Standard curb and gutter on field interior
- Black Base (Hot Mix Asphalt)
- No parabolic crown, flat roadway, drains away from interior curb
- Designed for airfield runway and tarmac simulations

- 80 ft cul-de-sac with curb and gutter
- 12 ft wide residential drive approach
- Mailbox
- Recessed curb stormwater inlet – 6 ft wide
- Covered meeting area/patio for equipment display

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Sweeper Wash Facility

WASH FACILITY FEATURES

- Top-of-the-Line facility allows customers to view and operate a sweeper-friendly wash facility
- TYMCO-designed wash facility to demonstrate the proper cleaning of sweepers. Routine cleaning is important to maintain sweeper performance and extend longevity
- Features installed within the wash facility helps TYMCO better test and verify performance of sweeper options
- Allows TYMCO to use this facility daily for proper cleaning of TYMCO sweepers being manufactured

4 interior hydrant locations with 3/4" water hose connection, equipped with manual hand crank hose reel for storage, and 2.5" NST connection for fire hose.

Exterior hydrant with 2.5" NST connection for fire hose. Full draining capability to prevent freezing.

Different equipment and features are continually being evaluated and installed for ease of operation and safety.

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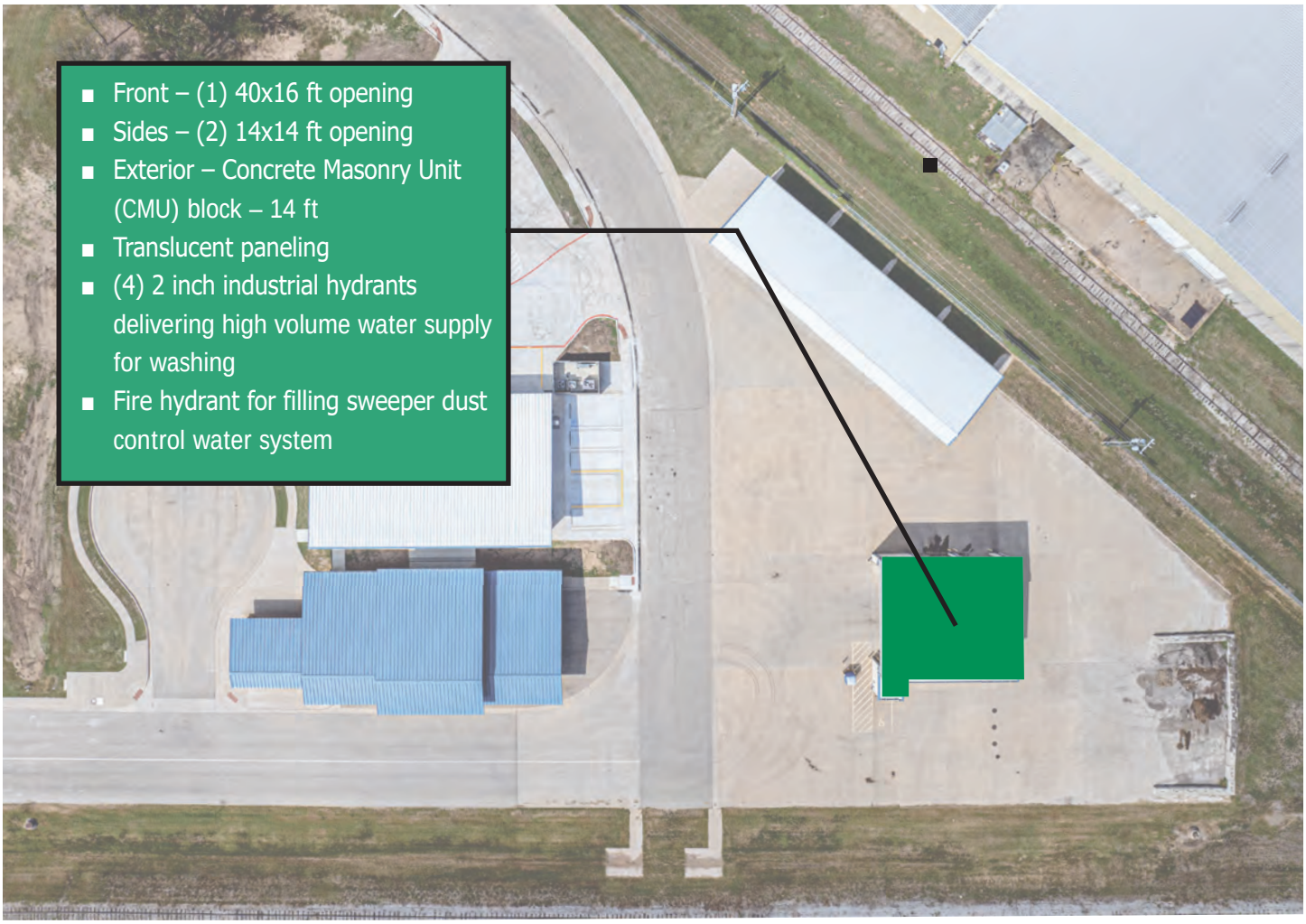
REGENERATIVE AIR SWEEPERS



CMU block exterior with translucent paneling on the top to allow light in.

Building drainage leading to Sand / Mud Interceptor, which intercepts the wastewater and retain it for a sufficient amount of time.

Sand/Mud Interceptor tanks allow time for separation of the solids from the water.

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Dealers and Purchasing

DEALER NETWORK

With over 55 locations throughout the United States and Canada, as well as many more worldwide, our experienced, independent dealers provide more than TYMCO Regenerative Air Sweepers. From parts, service and overall product support, TYMCO Dealers deliver superior customer service that sets us apart from the competition before, during and after the sale.

For more information or to contact your local authorized TYMCO Dealer, please visit *www.tymco.com/dealers*

OEM PARTS

- Don't downgrade a superior product with inferior parts
- TYMCO OEM replacement parts are engineered to meet TYMCO's high standards for safety, performance, and reliability
- TYMCO parts have undergone extensive research, evaluation, and on-the-road testing to ensure they meet TYMCO's rigorous quality standards
- OEM parts ensure longer life and limited down time
- Factory and Dealer level support is always readily available!

COOPERATIVE PURCHASING

BuyBoard® Cooperative Purchasing

HGACBuy THE SMART PURCHASING SOLUTION

Sourcewell Awarded Contract

canoe APPROVED SUPPLIER

LEASING PROGRAMS

- **Municipal Lease/Purchase Program** - Allows you to avoid having a bond referendum with a minimal down payment or first payment. We also have tailored, competitive tax-exempt fixed interest rates.

- **Commercial Leasing Program** - Offers different leasing options such as $1 buy-out, Fair Market Value (FMV) as well as traditional financing. We can assist you in not only getting a quote but also guiding you through the lease or finance process so that it goes smoothly.