Allied Engineering
Structural Mechanical Electrical Plumbing

60 years
Since 1958

March 30, 2018

Mr. Anthony T. Plante
Town Manager
Town of Windham
8 School Road
Windham, ME 04062

Re: WSVMF Design/Build Proposals Review and AEI's Recommendations.

Tony:

On March 22, 2018, Allied Engineering Inc. (AEI) received 2 bid solicitation packages on behalf of the Town of Windham for the Windham Shared Vehicle Maintenance Facility project. The solicitation packages were received from Benchmark Construction and Great Falls Construction.

As you recall, this process began with an involved vetting process in the form of a Request for Qualifications and similar experience with Design/Build project delivery efforts. We received 5 packages from which the committee determined that four (4) teams were viable. We followed up with each and sent Design-Build Request for Proposal solicitation packages to the following:

1. Great Falls Construction, Inc.
2. Nickerson & O'Day Construction
3. Benchmark Construction, Inc.
4. Sheridan Construction, Inc.

Soon after receipt of the packages, both Sheridan Construction and Nickerson & O'Day backed out of the process as each expressed that they were too booked to meet the schedule for this project. The remaining two contractors Great Falls and Benchmark remained in the process and were active with questions through to bid date of March 22, 2018. Based on the developed questions, and our finalizing of some particular items, 5 addenda were issued.

The RFP Section 003000 RFP Submission Requirements is very specific as to what was to be submitted as a part of this solicitation process and bid package. A copy of which is attached to this summary for your information. We received 2 packaged on the 22nd which can be summarized as follows:

1. Benchmark: Provided a bid form, bid bond and a Divisional breakdown of pricing which tallied to a project cost of $7,667,551.00. The breakdown provided on the bid form did not the stated overall project budget line item value. However, the divisional breakdown did properly tally to match the stated overall project budget line item value.

   No other information was submitted as a part of their package which again was the requirement as outlined in Specification Section 003000 noted above.

   The submitted Benchmark package does not meet the submission requirements of Section 003000, nor does it give us a basis from which a comparison can be made with respect to what is being offered in their number as it relates to systems, site, building elements and/or MEP systems.

2. Great Falls: Provided a bid form and bid bond and a Divisional breakdown of pricing which tallied to a project cost of $8,171,027.00. Great Falls further provided drawings for architectural and structural foundations and the pre-engineered building frame, and a 3 inch binder containing descriptions and cut

sheets for intended equipment, finishes, MEP systems and site layout confirmations. Additional information was presented in this binder that you can view in the binder copy I dropped off at your office on Monday the 26th.

a. Great Falls followed up with a letter further describing the included elements of the project in a letter provided on March 26, 2018 (included)

b. Since my meeting with you on Monday, AEI reviewed the Mechanical systems and equipment information provided in the binder and requested additional information from Great Falls in order to confirm what was included in their Number. A copy of that formal letter response is attached along with supplemental support information.

c. I had a discussion this morning with Great Falls regarding the bus parking requirement, first level of pavement and the guard rail/block warmer outlet installations by August 15, 2018 not being included in their project schedule. I directed them to the contract verbiage that identified this requirement they acknowledged this timeline requirement in writing and offered a revised project schedule that included this milestone. Also attached.

d. Base bid offered the following add/deduct items for consideration. Our recommendation as to whether to accept or reject is offered below.
   1. Matrix Electronic recording of bulk fluids Add $42,927.00 – Not Recommended – This was discussed during the design with Doug and found not to be a requirement for this project…We do not believe that this warrants the added cost.
   2. Add a bulk grease system and 6 hose reels Add $27,643.00 – Not Recommended - This was discussed during the design with Doug and found not to be a requirement for this project…We do not believe that this warrants the added cost.
   3. Upgrade to Westmatic system (highly recommended) Add $20,000.00 – **AEI recommends accepting this – further discussion on this is found in the question and Answers offered in the attached documents to this letter.**
   4. TPO roofing in lieu of EDPM (white) Deduct ($23,700.00) – **AEI recommended Accepting as both roofs are comparable, TPO is in fact preferable.**
   5. To reduce the gravel profile of the A gravel 2" and D gravel 2" and the reduced cut in subgrade would be a cost saving of Deduct ($25,600.00) – Not Recommended - That gravel is the primary strength of the pavement system and they are running heaving dump trucks and buses over the pavement daily. It's a pretty hard sell for Gorrill-Palmer, AEI and SWCole.
   6. Change to standard make up air units in lieu of ERU's Deduct ($135,000.00) – **Acceptable to AEI provided that energy recovery is provided only where current code requires it.**
   7. Remove the Vehicle exhaust rail system Deduct Will re-engineer – **GF revising to reflect intent of design. Final may result in an additional deduct to the project.**
   8. Remove the interior framing, plywood and FRP From the three exterior walls in the truck wash Deduct ($60,500.00) – Not Recommended – Water sits on the girts and concrete shelf, causing havoc with these finishes and siding connections.

Total Recommended Delta to the Great Falls Project Budget is a deduct in the amount of $138,700 with a potential for more savings from the vehicle exhaust routing redesign. This would result in a revised contract value of $8,032,327.00.

Allied Engineering
Structural Mechanical Electrical Commissioning

AEI's Recommendation:

Given the two submissions, it is our recommendation that the Town reject the proposal provided by Benchmark Construction in its entirety for non-conformance to the Request for Proposal issued to all chosen vendors.

We further recommend that the Town consider entering into a contract with Great Falls Construction based on their submission meeting the intent of the documents, being within the identified project budget and based on the quality of product represented for installation in this proposed building.

I have attached a letter I received from Benchmark, this date, regarding the current state of costs relative to the anticipated pricing on steel. Great Falls will honor their budget presentation for the duration outlined in the contract documents. However, if either a letter of intent or contract is not signed in that timeline, the Owner may experience a price increase relative to the potential steel pricing increases. As such, they do ask that you consider authorizing the development of a letter of intent to lock in pricing on both the pre-engineered steel building order and for the foundation rebar on this project. They would need a letter of intent acknowledging them to proceed with ordering with protection in the amount of $58,424.40 to guarantee a hold on the pricing on these elements for the project. This represents 10% of the value of the steel and will hold the project cost for the steel.

This could go a long way on their behalf relative to minimizing the impact of any steel price increases in the time between now and when a final contract can be signed. They are aware that this would be a limited value as it would cover the down payment for locking in the steel values and any preliminary design efforts for shop drawing preparation for both rebar and pre-engineered building systems.

Great Falls is aware of the DEP and local Planning Board site approval date expectations, however, the more they can get done up front, the faster they can hit the ground running upon receipt of approvals. Their foundation design is nearly complete as is the pre-engineered building design. They are both at the point where Great Falls can submit shop approval drawings, so this process could be expedited if the town chooses to do so. They expect that they will have foundations in the ground within 3-4 weeks of approval receipt, as an example, if the Limited letter of intent can be provided.

We are excited at the prospect of getting this project underway, its been a long time coming. Please direct AEI how the Town would like to proceed. Please call with questions.

Regards,
Allied Engineering, Inc.

William P. Faucher, P.E., SECB, LEED^{AP}
Registered Roof Consultant
Principal

Enclosures:
1. Great Falls Submittal Follow-up, March 25, 2018
2. Great Falls AEI Question Follow-up, March 28, 2018 with Exhibits.
3. Acknowledgement of Project Schedule and Request for Limited Letter of intent with steel purchase value coverage.
4. Revised Project Schedule dated March 29, 2018.
5. MESCO March 2018 Price Increase letter.

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March 26, 2018

William Faucher, P.E.
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www.allied-eng.com

Regarding: Windham Shared Vehicle Maintenance Facility
Windham, ME
Bidding Contract Requirements and Specifications – Design/Build

Dear Bill,

We wanted to extend our sincere appreciation for considering Great Falls Construction for the Design/Build project of the Windham Shared Vehicle Maintenance Facility. Our team paid close attention to bid requirements and the four items being evaluated by the Project Review Team when preparing our proposal package:

1. Ability to meet owner's program and facility requirements within the City's allocated budget.
2. Creativity and Design-Build approach to the project.
3. Quality and experience of Design-Build project team.
4. Completeness and thoroughness of proposal.

Great Falls Construction is a quality driven company making our first objective to always consider the ***quality to value*** analysis and to provide the very best products and construction methods that can be sustained by the stated budget. We feel that a review of our package will show that we are under budget and the products proposed are of the finest industrial/commercial quality made based on our experience in recent similar projects. A short list of the items is as follows:

1. **Custom Concepts Inc. Architecture,** has worked out some code compliance items in the design and has met, in person, to review the plans with the Office of the State Fire Marshal in Augusta. We feel that this step will allow us to move efficiently towards obtaining the required state permits as quickly as possible if we are awarded the project.
2. Our preferred **earthwork contractor** is R.J. Grondin who has the manpower and equipment to meet the quality standards as well as the proposed schedule. We have estimated that it will take a strong three (3) weeks to have foundation holes ready. Our level of design will permit the foundation work to start that quickly.
3. **Pre-Engineered Metal Building** is manufactured by Mesco and designed as a class IV.
4. **Insulated metal wall panels** are made by Metlspan a MBCI company with an outstanding warranty and the best Kynar finish available.
5. The **Crane** is being provided by New England Crane, a local supplier and installer of the best crane components and controls. This is the same crane/trolley system GFC installed in the South Portland Facility.
6. Automotive Garage Technology (AGT) is a local and reputable subcontractor and supplier of everything vehicle maintenance. They are the only vehicle maintenance company offering 24/7 hr. service on garage equipment. The Town of Windham stated that they would like to see local subcontractors involved in the project if possible. AGT has been scheduled to provide:

a. **Vehicle exhaust system** manufactured in the USA by Harvey. We provided a sample of the track/duct/rail system for your inspection. It is thicker, the connections are pined and the hose reel trolleys have balanced wheels to promote smooth and effortless rolling for many years. Please note that the rail system requested is very costly to purchase and install.
b. **Bulk oil distribution** has been specified as Graco. Undisputedly the most reliable pumps and hose reels in the industry. The dispensing nozzles have been included with the gust to be expanded to the Graco Matrix fluid monitoring system. This system work much like the Fuel Master in that it will record what vehicle, department and the fluid being used plus quantity. This would be very helpful in a multi department facility such as Windham.
c. **Keiser Compressed air system** is absolutely the gold standard in rotary screw air compressors. We have also included all aluminum, non-corrosive air lines with quick attach fittings. The system is long lasting and very easy to expand or modify.

7. The **office area** is a combination of structural steel, concrete, light gauge metal framing and conventional lumber framing. A few key components in our design of this area are as follows:
    a. We added a dog house dormer to the back roof providing mechanical access to the attic truss area as well as safe and easy access to the flat roof. We simply added another flight of stairs to the existing stairwell.
    b. The sheathing method is regular CDX applied to the wall studs and then a layer of insulated Zip system. This system provides the required insulation values, vapor and air barrier as well as nailing for the composite sidewall shingles requested in the project specification.
    c. The windows are all non-operational aluminum frames and insulated glass.
    d. The two entry doors are aluminum store front quality matching the window system with access control and meeting all ADA standards.
    e. Roof sheathing will be Advantech Roof sheathing, ice and water shield along the eaves and in the valleys with lifetime architectural asphalt roof shingles.
    f. The roof is vented with large gable end louvers.
    g. Interior wall studs are also light gauge metal studs with large slip tracks to allow for the wooden trusses to deflect in accordance with their design.
    h. The attic trusses will provide a walking surface and ease of duct installation, insulation and maintenance if ever required. We are certain that additional storage will be available as well.
8. **MEPS** have been extensively worked on by our partners Macleod Structural Engineering and Bennett Engineering. You will find complete foundation drawings in the project proposal as well as full Mechanical, Plumbing, Sprinkler and Electrical specifications. We have learned from the Design/Build process at the Westbrook and South Portland multi use facilities. From our lesson learned folder, we decided to move the mechanical units onto the flat portion of the roof for several reasons:
    - To reduce mechanical noise and vibration. The mechanics complain about noise in Westbrook and we had to modify the VFD's to reduce duct noise as well. Relocating to the roof over the garage will all but eliminate those two issues

- Relocating the units to the roof will double the amount of usable storage for parts, tires etc.
- Maintenance and replacement of units on the roof is very simple and safe without interfering with any of the internal operations
- Significant reductions in the need for intake and exhaust louvers and penetrations.

Note: If we change to make-up air units in lieu of the ERU's we have specified the savings could be between $100,000- $135,000. If we eliminate the dog house dormer the savings will be around $10,000. There should still be an access hatch and ships ladder to get onto the roof.

9. **Truck wash system** has been provided as specified and by the indicated supplier. We strongly recommend the purchase and installation of a Westmatic system as an upgrade. GFC was part of the team that reviewed and ultimately decided to go with this manufacturer in South Portland. Their system provides the same and more than what has been included like nozzles designed to hit the wheels, wheel wells, rocker bars and undercarriage. The controls are easy to operate, there is a red light/green light system in place to direct the vehicles as well as a tire guide to center them on the spray. The hose trolley system is robust to say the least. One of our favorite design aspects was the large internal settling and recycling pit. We feel that exterior tanks are fine in warmer climates, but pose many problems in New England. In addition to be covered by snow, ice and exposed to salt etc., the specified tanks would need confined entry permits, tripods and gas testing to enter. The internal trench has none of those issues.
10. **Cold Storage Building** has been designed as a Pre Engineered Metal Building with all siding, roofing, trim and condensation barrier on the roof to prevent dripping. The building has a full foundation and reinforced concrete slab for the floor.
11. **Fuel system** We carried an entirely new Fuel Master system. If the Town has a system that is just being relocated, there is savings to be found there.

We feel our proposal speaks for itself regarding the thoroughness and completeness of the design. We prepared full design-build documents including 3-D imagery, Foundation plans, metal building reactions, MEPS drawings and specifications and individual data sheets/samples for each and every product being proposed in order to meet the proposed schedule. **Our approach to the project is to provide the very best products, buildings, equipment and craftsmanship for the budget.**

SCHEDULE

Great Falls Construction is confident in our ability to complete on time and on budget. Please review the information contained in this section for an outline of our approach and actions GFC has taken to secure a timely completion.

Critical Path/ Schedule:	**Completion Date:**
Construction Start	May 1, 2018
Maintenance Garage & Fueling system	November 15, 2018
Administration and office area	December 15, 2018

Actions taken to insure/secure the above schedule:

1. Secured final PEMB stamped drawings with the Anchor Bolt layout and all reactions ready for submittal to AEI (see Pre-Engineered Building)
2. Secured final Stamped engineered foundation drawings and specifications ready for submittal to AEI (See foundations)
3. Prepared a Complete Fire Marshall set of documents and scheduled a review with the State Fire Marshal on 3/26/18 with Custom Concepts Inc. (Architect) Only solicited bids from subcontractors and suppliers that have the capacity and manpower to meet the project schedule
4. Advised bidding earthwork contractors that they will be required to start foundations immediately if awarded the project
5. Solicited proposals from local suppliers and subcontractors

Schedule of Values A: *Excluding the Cold Storage building*

Description	XtdCost
General Requirements (01.0000)	$561,823.29
Existing Conditions / Demo (02.0000)	$43,504.99
Concrete (03.0000)	$599,715.84
Masonry (04.0000)	$73,457.65
Metals (05.0000)	$229,024.10
Woods and Plastics (06.0000)	$121,707.88
Thermal and Moisture (07.0000)	$276,337.36
Doors and Windows (08.0000)	$187,473.64
Finishes (09.0000)	$460,352.88
Specialties (10.0000)	$72,045.33
Equipment (11.0000)	$48,675.72
Furnishings (12.0000)	$46,944.01
Special Construction (13.0000)	$550,736.08
Elevators (14.2000)	$96,215.01
Fire Suppression (21.0000)	$89,928.01
Plumbing (22.0000)	$512,052.71
HVAC (23.0000)	$999,455.07
Electrical (26.0000)	$518,063.83
Earthwork (31.0000)	$2,194,191.39
Fuel Island (50.0000)	$285,303.63
	$7,967,008.43

Schedule of Values B: *Cold Storage Building only*

Description	XtdCost
General Requirements (01.0000)	$15,666.06
Concrete (03.0000)	$40,572.46
Woods and Plastics (06.0000)	$3,180.84
Thermal and Moisture (07.0000)	$3,053.60
Doors and Windows (08.0000)	$18,477.48
Painting (09.9100)	$2,120.56
Special Construction (13.0000)	$83,948.65
Electrical (26.0000)	$14,602.16
Earthwork (31.0000)	$22,396.27
	$204,018.09

A. Windham Shared Vehicle Maintenance Facility	$7,967,008.00
B. Cold Storage Building	$ 204,018.00
Total for full scope of the project	$8,171,026.00

Alternates:

1.	Matrix Electronic recording of bulk fluids	Add	$42,927.00
2.	Add a bulk grease system and 6 hose reels	Add	$27,643.00
3.	Upgrade to Westmatic system (highly recommended)	Add	$20,000.00
4.	TPO roofing in lieu of EDPM (white)	Deduct	($23,700.00)
5.	To reduce the gravel profile of the A gravel 2" and D gravel 2" and the reduced cut in subgrade would be a cost saving of	Deduct	($25,600.00)
6.	Change to standard make up air units in lieu of ERU's	Deduct	($135,000.00)
7.	Remove the Vehicle exhaust rail system	Deduct	Will re-engineer
8.	Remove the interior framing, plywood and FRP From the three exterior walls in the truck wash	Deduct	($60,500.00)

In conclusion, Great Falls Construction understood from the information provided and the clear explanation of the process at the pre-bid meeting that a complete design/build package was a requirement for consideration. We delivered the outlined materials and are excited about meeting with the Town's team to discuss the entirety of the design and proposal.

Sincerely,

Todd Desmarais Sr.
Project Executive

GREAT FALLS CONSTRUCTION

March 28, 2018

William Faucher, P.E.
160 Veranda Street
Portland, ME 04103
Ph. 207.221.2260
Fax 207.221.2266
www.allied-eng.com

Regarding: Windham Shared Vehicle Maintenance Facility
Windham, ME
Answers to follow up questions dated 3-26-18 from AEI

Dear Bill,

We wanted to extend our sincere appreciation for considering Great Falls Construction for the Design/Build project of the Windham Shared Vehicle Maintenance Facility and providing us the opportunity to answer your questions.

DIVISION 21

1. Concealed heads should be provided in vehicle wash bay for protection from pressure washers.

A: Agreed and included in base bid

DIVISION 22

1. Provide DHW Recirc system to within 25 feet of all fixtures with DHW.

A: Agreed and it is included in the base bid

2. Emergency shower and eye-face wash units are required where shown on architectural.

A: Agreed and they are included in the base bid

3. No CPVC piping for domestic hot and cold water distribution—only copper and PEX.

A: Agreed and we priced the system with the specified pipe and fittings

4. Pipe insulation requirements per MUBEC.

A: Agreed and included in base bid

5. (1) 2" DCW drop required at each wash bay per owner requirement.

A: Agreed and included in base bid

6. Vehicle/truck wash recycle system: provide documentation that system will operate with reclaimed water that contained road salts and chemicals and that system will operate during the winter months.

A: Base bid includes the specified system and supplier. We provided an upgrade to the Westmatic System and we have included additional information about their product, media clip, 5 years of completed facilities (prior to 2017) See Exhibit A.

7. Wash bay is shown on drawings with trench drain system and catch basin drains (2). Catch basin drains are the design intent.

A: If the specified manufacturer is chosen, the catch basins will be the system installed. We would recommend a minimum of a two foot (2') sump and use oversized pipe between the units and to the first settling tank. They are included in our base bid that way.

We also provided an alternate to go with Westmatic. If we make the upgrade, the three 1000 gallon tanks on the exterior are removed and replaced with 1 trench the length of the wash bay down the center. That trench serves as the settling tank before the water on the top flows to pit # 1 then to pit# 2 and finally back into the system buffer tanks and wash. This is the same set up we installed in South Portland. The design team there thought that avoiding exterior tanks that get frozen covers and avoids confined space conditions was significant. Simply pick up a section of fiberglass grating and you have full access to clean at any time, any season.

8. Bulk fluids: 1,300 gallon waste oil tank is required for operation of waste oil furnace.

A: Agreed and included in base bid as well as relocation of system and all required piping/start-up.

DIVISION 23

1. Do boiler sizes indicated in bid package account for each boiler being sized at 60% of connected heating load?

A: Yes, the boilers have been sized accordingly-Viessmann Vitodens packaged systems

2. Did not see reference to in floor radiant heating and the snow melt system in the bid package.

A: We included radiant heat in the garage slab and wash bay slab as well as snow melt in the exterior aprons in front of the overhead doors.

3. Indoor AHU and ERU were design intent for serving the upper and lower levels of the Admin. Building.

Note: If the above noted intent is desired after reading our variation, we can definitely supply and install the indoor AHU and ERU on the mechanical mezzanine as originally specified without any cost modifications. See below for our reasoning.

A: We have learned from the Design/Build process at the Westbrook and South Portland multi use facilities. From our lesson learned folder, we decided to move the mechanical units onto the flat portion of the roof for several reasons:

-To reduce mechanical noise and vibration. The mechanics complain about noise in Westbrook and we had to modify the VFD's to reduce duct noise in the administration area as well. Relocating to the roof over the garage will all but eliminate those two issues

-Relocating the units to the roof will double the amount of usable storage for parts, tires etc.

-Maintenance and replacement of units on the roof is very simple and safe without interfering with any of the day to day operations

-Significant reductions in the need for intake and exhaust louvers and penetrations.

4. AHU serving the Administration design intent is a VAV system with VFD supply fan—bid package stated 2-speed fan.

A: Our intention was to use a VAV system with VFD supply fan. The two speed fan in incorrect. The VAV and VFD is included in our base bid.

5. Emergency exhaust ventilation systems were not indicated in bid package.

A: There will be a vehicle exhaust extraction system and the proposed ERU(s) would be used for general ventilation and "emergency" ventilation. The ERU(s) will be capable of being ramped up or down for "occupied" and/or unoccupied modes as well as ramped up to full air flow on an alarm condition (CO, NOx). Hard metal ductwork can be used or "duct sock" for supply side if the Owner has a preference we will use the Owner preferred material.
The wash bay will have a dedicated exhaust fan and gas fired MUA system as specified.

6. Temperature controls design intent is a DDC system with a front end—bid package states programmable wall thermostats and electric/electronic controls.

A: Full DDC system is included in the base bid as specified and provided by Maine Controls.

7. G60 and G90 ductwork specified with aluminum or SS for truck wash. Fabric ductwork is specified for the emergency exhaust supply air—did not see reference to this in the bid package.

A: Agreed and included in base bid for the truck wash.

8. The vehicle exhaust/capture system design intent is to have the slide rail system with looped hose drops between the work bays (running from overhead doors inward). The design intent is not to have hose reels.

A: We misinterpreted the intent and included two rows running the length of the bays from left to right. It appears that we have enough lineal footage to run as indicated. The standard hanging hose will be a savings from the hose reels we included. We need to send the design back to engineering for the modifications and pricing, but we anticipate a savings or even swap.

9. Wood shop small dust collection system specified was not in bid package.

A: Included in base bid, See Exhibit B:

-(1) Portable indoor dust collector for Wood Shop (Jet Manufacturing DC-1100VX-BK) Exhibit B

-(1) Portable welding exhaust system 100% recycling (Airflow Systems PCH-1)

10. Wet/dry central vacuum system specified to serve the wash bays was not in the bid package.

A: Included in base bid, but we did not specify make and model, we will make the final choice with the Owner and design reps during the submittal process.

If you have any further questions please do not hesitate to reach out.

Sincerely,

Todd Desmarais Sr.
Project Executive

DUST COLLECTION

GREATER PERFORMANCE. A CLEANER WORKSHOP.

JETTOOLS.COM

DUST COLLECTION

THE WAY IT WAS MEANT TO BE

CONTENTS

THE JET ADVANTAGE

DEPTH AND BREADTH OF LINE

JET offers a full range of machines to fill all your woodworking needs. Every operation of your project can be trusted to JET. Take a look at all the machines available for sawing, planing, turning, sanding and dust collection.

QUALITY

Reliable, quality engineering and manufacturing goes into each and every JET machine. JET machines are built and tested to tight tolerance standards to insure consistent quality and precision operations.

INNOVATIVE PRODUCTS

JET is committed to ongoing innovation demonstrated in the introduction of new products.

PROFESSIONAL MANUALS

JET manuals are professionally written by engineers for ease of use. All manuals come complete with parts breakdown and electrical drawings.

INDUSTRY LEADING WARRANTY

Your JET equipped shop is backed by one of the industry's most comprehensive warranties-JET offers a 5-year warranty confirming our confidence in the quality of our design and workmanship.

AUTHORIZED SERVICE CENTERS

JET offers over 750 authorized service centers across the USA. You can be assured a qualified local technician can help troubleshoot, order parts and repair your equipment should a problem arise.

FEATURING VORTEX CONE™ TECHNOLOGY

THE BENEFITS BEHIND THE TECHNOLOGY

- Eliminates filter clogging and subsequent health concerns from manual cleaning.
- Eliminates rapid performance drop due to premature filter clogging
- Dramatically improves chip separation efficiency of single stage dust collectors
- Aids in quick fallout of chips into the collector bag instead of clogging the filter bag or canister
- Reduces violent airflows in the collector bag which increases the packing efficiency for fewer bag changes

WATCH THE VIDEO...

Visit vortexcone.com to Learn More and See It In Action

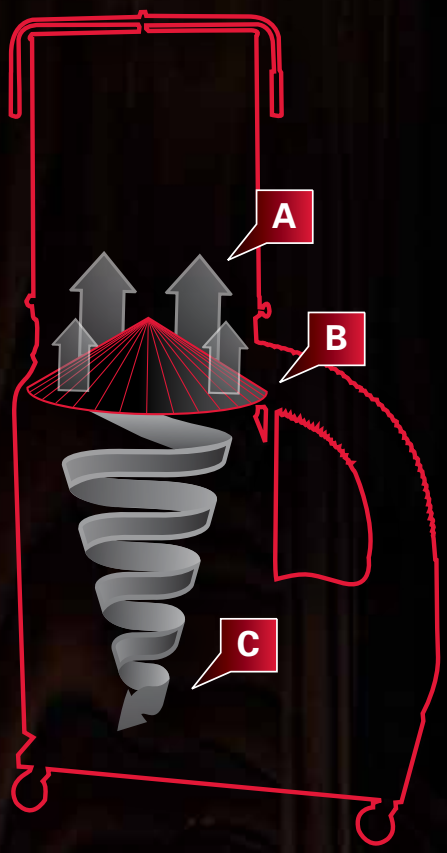
AFTER 20 MINUTES OF USE...

WITHOUT THE VORTEX CONE
Filter gets clogged thus dropping performance and requiring frequent maintenance

WITH THE VORTEX CONE
Filter stays cleaner preserving performance and requiring little maintenance

THE DIFFERENCE IS CLEAR...

Both model DC-1100 dust collectors were run for 20 minutes. The dust collector to the left does not have the all new Vortex Cone™ Technology, the canister on the right does. As you can see the Vortex Cone eliminates 98% of the wood chips from clogging your filter which leaves your dust collector running more efficiently.



AN INSIDE LOOK AT THE VORTEX CONE

A. PERFORMANCE
Only fine particles move to the filter chamber making manual cleaning easier and decreasing health concerns

B. PREVENTION
Prevents the central airflow from floating chips into the filter chamber decreasing rapid performance drop due to premature clogging

C. EFFICIENCY
Chips are better contained for increased packing density requiring fewer collection bag changes

DC1100VX
DUST COLLECTORS

FEATURING VORTEX CONE™ TECHNOLOGY

A. Quick-Install Collection Bag
B. See-through Dust Bag
C. 2-Micron Canister Filter
D. Quick-Install Disposable Collection Bag
E. Heavy-Duty Casters
F. Filter Cleaning Baffles
G. Dual 4" Dust Port
H. Thumbscrew Removal for Canister

5 YEAR WARRANTY

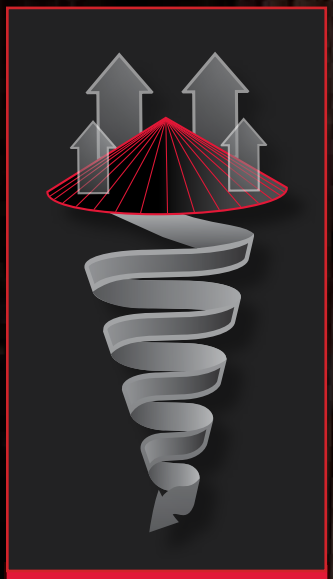
FEATURES

- Industrial-quality construction effectively handles collection of wood chips and sawdust
- Quick-install collection bag makes emptying and re-attaching a snap
- Single-stage design for economical and quiet operation
- Includes four casters for maneuverability and total portability
- High air velocity (CFM) design stands up to any competitive specifications
- Permanently lubricated, totally enclosed, fan-cooled motors are rated for continuous-duty
- Optional canister filter offers superior dust collection by capturing particles as small as 2 microns
- Optional Remote Control is Radio Frequency, no need for line of sight to turn machine on and off

AFTER 20 MINUTES OF USE

WITHOUT THE VORTEX CONE
Filter gets clogged thus dropping performance and requiring frequent maintenance

WITH THE VORTEX CONE
Filter stays cleaner preserving performance and requiring little maintenance



VORTEX CONE
Aids in quick fallout of chips into the collector bag instead of clogging the filter bag or canister

STOCK NUMBER	708657K	708659K	708658K
Model Number	DC-1100VX-BK	DC-1100VX-CK	DC-1100VX-5M
Equipped with Vortex Cone Technology	✓	✓	✓
Blower Wheel Diameter (in.)	11	11	11
Sound Rating (dB)	70-80	70-80	70-80
1-Hose Connection Diameter (in.)	6	6	6
2-Hoses Connection Diameter (in.)	4	4	4
Bag Diameter (in)	20	20	20
Filter Bag/Canister Length (in.)	32	25	46
Collection Bag Capacity (cu. ft.)	5.3	5.3	5.3
Collection Bag Length (in.)	29	29	30
Air Flow @ 4" (CFM)	1100	1100	1100
Static Pressure (inch of water)	10.5	10.5	10.5
Particle Size (Micron)	30 (Bag) 98% of 30 micron particles	2 (Canister) 98% of 2 micron particles; 86% of 1 micron particles	5 (Bag) 98% of 5 micron particles; 74% of 1 micron particles
Amps	11/5.5	11/5.5	11/5.5
Motor HP	1-1/2HP	1-1/2HP	1-1/2HP
Motor Phase	1Ph	1Ph	1Ph
Motor Voltage	115/230V	115/230V	115/230V
Prewired	115V	115V	115V
Net Weight (lbs.)	97	117	97

ACCESSORIES	STOCK NO.
30 Micron Bag Kit (Filter & Collector)	708636F
5 Micron Bag Kit (Filter & Collector)	708636MF
Canister Filter with Clear Bag Kit	708639B
Replacement 30 Micron Filter Bag	708698
Replacement 30 Micron Collection Bag	708699A
Replacement Clear Plastic Collection Bags (5)	709563
115V RF Remote (Includes transmitter)	708636C
Transmitter for RF Remote	708636T

DC1100 & DC1200VX
DUST COLLECTORS

FEATURING VORTEX CONE™ TECHNOLOGY

A. Quick-Install Collection Bag
B. See-through Dust Bag
C. 2-Micron Canister Filter
D. Quick-Install Disposable Collection Bag
E. Heavy-Duty Casters
F. Filter Cleaning Baffles

FEATURES

- Industrial-quality construction effectively handles collection of wood chips and sawdust
- Quick-install collection bag makes emptying and re-attaching a snap
- Single-stage design for economical and quiet operation
- Includes four casters for maneuverability and total portability
- High air velocity (CFM) design stands up to any competitive specifications
- Permanently lubricated, totally enclosed, fan-cooled motors are rated for continuous-duty
- Optional canister filter offers superior dust collection by capturing particles as small as 2 microns

STOCK NUMBER	708636K	708636CK	708636MK	710701K	710702K	710703K	710704K
Model Number	DC-1100	DC-1100CK	DC-1100M	DC-1200VX-BK1	DC-1200VX-CK1	DC-1200VX-BK3	DC-1200VX-CK3
Equipped with Vortex Cone Technology	-	-	-	✓	✓	✓	✓
Blower Wheel Diameter (in.)	11	11	11	12	12	12	12
Sound Rating (dB)	70-80	70-80	70-80	80-85	80-85	80-85	80-85
1-Hose Connection Diameter (in.)	6	6	6	6	6	6	6
2-Hoses Connection Diameter (in.)	4	4	4	4	4	4	4
Bag Diameter (in)	20	20	20	20	20	20	20
Filter Bag/Canister Length (in.)	32	25	46	32	25	32	25
Collection Bag Capacity (cu. ft.)	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Collection Bag Length (in.)	29	29	30	29	29	29	29
Air Flow @ 4" (CFM)	1100	1100	1100	1200	1200	1200	1200
Static Pressure (inch of water)	10.5	10.5	11.5	11.5	11.5	11.5	11.5
Particle Size (Micron)	30 (Bag) 98% of 30 micron particles	2 (Canister) 98% of 2 micron particles; 86% of 1 micron particles	5 (Bag) 98% of 5 micron particles; 74% of 1 micron particles	30 (Bag) 98% of 30 micron particles	2 (Canister) 98% of 2 micron particles; 86% of 1 micron particles	5 (Bag) 98% of 5 micron particles; 74% of 1 micron particles	2 (Canister) 98% of 2 micron particles; 86% of 1 micron particles
Amps	11/5.5	11/5.5	11/5.5	8	8	6/3	6/3
Motor HP	1-1/2HP	1-1/2HP	1-1/2HP	2HP	2HP	2HP	2HP
Motor Phase	1Ph	1Ph	1Ph	1Ph	1Ph	3Ph	3Ph
Motor Voltage	115/230V	115/230V	115/230V	230V Only	230V Only	230/460V	230/460V
Prewired	115V	115V	115V	230V	230V	Prewired 230V	Prewired 230V
Net Weight (lbs.)	97	117	124	108	127	108	127

DC650
DUST COLLECTORS

5 YEAR WARRANTY

708642BK

708642CK

A. Quick-Install Filter Bag
B. Quick-Install Collection Bag
C. See-through Dust Bag
D. 2-Micron canister filter
E. Clear Disposable Collection Bag
F. Heavy-Duty Casters

FEATURES

- Hook up one to three machines for optimum dust cleaning
- Quick-install collection bag makes emptying and re-attaching a snap
- Single-stage design for economical and quiet operation
- Includes four casters for maneuverability and total portability
- High air velocity (CFM) design stands up to any competitive specifications
- Permanently lubricated, totally enclosed, fan-cooled motors are rated for continuous-duty
- Optional canister filter offers superior dust collection by capturing particles as small as 2 microns
- Remote Control is Radio Frequency, no need for line of sight to turn machine on and off

STOCK NUMBER	708642BK	708642CK	708642MK
Model Number	DC-650	DC-650CK	DC650M
Equipped with Vortex Cone Technology	-	-	-
Blower Wheel Diameter (in.)	9-1/2	9-1/2	9-1/2
Sound Rating (dB)	65-70	65-70	65-70
1-Hose Connection Diameter (in.)	4	4	4
2-Hoses Connection Diameter (in.)	14	14	14
Bag Diameter (in)	-	-	-
Filter Bag/Canister Length (in.)	24	25	31-1/2
Collection Bag Capacity (cu. ft.)	2.1	2.1	2.1
Collection Bag Length (in.)	23	23	23
Air Flow @ 4" (CFM)	650	650	650
Static Pressure (inch of water)	6.5	6.5	6.5
Particle Size (Micron)	30 (Bag) 98% of 30 micron particles	2 (Canister) 98% of 2 micron particles; 86% of 1 micron particles	5 (Bag) 98% of 5 micron particles; 74% of 1 micron particles
Amps	7/3.5	7/3.5	7/3.5
Motor HP	1HP	1HP	1HP
Motor Phase	1Ph	1Ph	1Ph
Motor Voltage	115/230V	115/230V	115/230V
Prewired	115V	115V	115V
Net Weight (lbs.)	62	70	86

DUST COLLECTION 101

A GUIDE TO HELP YOU SELECT THE RIGHT MACHINE

AIR VOLUME REQUIREMENTS

This illustration shows the basic air-volume requirements of standard shop machines. Keep in mind when running multiple machines the CFM requirements need to be added together to select the appropriate dust collector.

TABLESAW >
350 CFM

MITERSAW >
350 CFM

JOINTER >
450 CFM

BEFORE YOU BUY CONSIDER...

1. PERFORMANCE REQUIREMENTS

EFFICIENCY

Two specifications that provide an accurate measurement of a dust collector's actual performance:

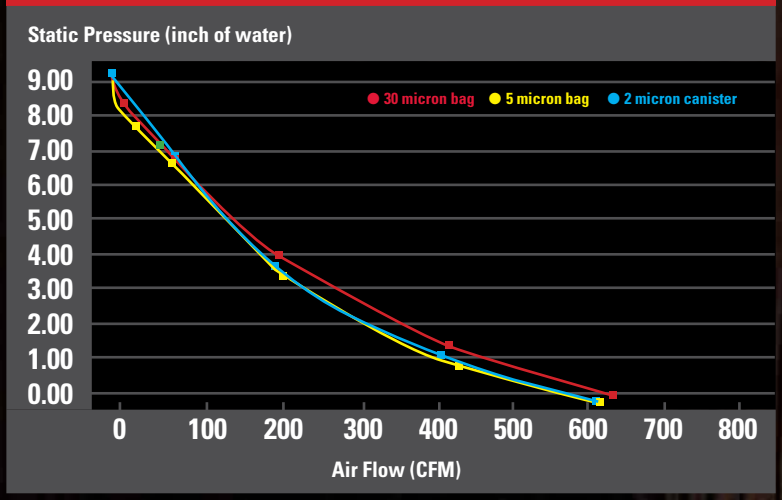
(1) **CFM (Cubic Feet per Minute) - Volume of air a collector moves**

(2) **SP (Static Pressure) - Number of inches of pressure created**

AIR PERFORMANCE

A Fan Curve chart illustrates the genuine performance of a dust collector. It measures CFM at various levels of air resistance. As the inches of SP increase, the CFM decreases. Performance is not compromised with the addition of a finer filter

SAMPLE FAN CURVE CHART



*YOUR RESULTS MAY VARY.

PLANER >
785 CFM

SHAPER >
350 CFM

BANDSAW >
350 CFM

DISC SANDER >
450 CFM

BELT SANDER >
550 CFM

DRUM SANDER >
550 CFM

BEFORE YOU BUY CONSIDER...

CFM RATING

A higher CFM rating indicates that the collector can handle a higher output, either more chips or multiple machines. A higher SP rating indicates that more ductwork can be used and still be efficient. With high CFM and SP ratings, the Vortex Cone models will ensure that you achieve the power needed.

QUICK TIP

BUY A DUST COLLECTOR THAT EXCEEDS YOUR NEEDS>
Look for more performance than your immediate need to account for changing variables..

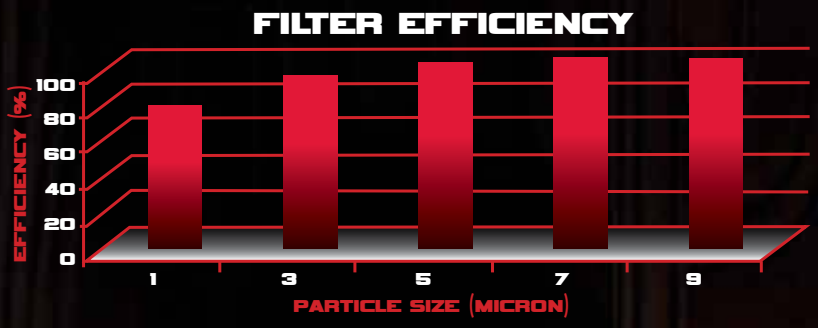
2. FINE DUST

98% is the industry standard for filter efficiency. When the filter catches 98% of particles of the given size (in microns) it meets accepted industry standards.

Many advertisements give a filter measurement in microns, but don't give any information about the efficiency level. Some products advertise a 1 or 2 micron filter, yet the efficiency at that size is only 70%. Most products will filter at the 1 or 2 micron level at a deeply decreased efficiency level.

While a 30 micron filter works with larger chips, the fine dust created by sanding machines will be better captured by a 5 micron bag or a 2 micron canister.

The Vortex Cone technology improves any dust collector by significantly reducing dust particles from clogging your filter. A canister dust collector with the Vortex Cone gives you the best single stage dust collection system on the market.



QUICK TIP

BUY THE BEST FILTRATION SYSTEM YOU CAN AFFORD>
Pleated cartridge-type filters are more effective at capturing finer dust particles, which pose a health risk.

BEFORE YOU BUY CONSIDER...

3. MULTIPLE MACHINES

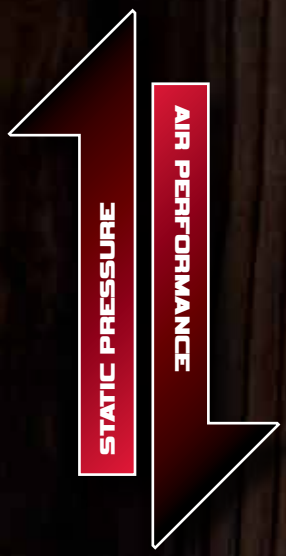
To determine what level of machine is needed, the CFM levels of the machines need to be added together. (Table Saw (350 CFM) and Jointer (450 CFM) = 800 CFM Total)

Adding duct work or additional hosing to the dust collection unit will produce a drop in performance. This is most evident when more than one machine uses the same dust collector.

DUCTWORK

When a collector is working harder due to added ductwork fewer chips and less dust is sucked up. A good analogy is to imagine how much harder it would be to take a sip of soda through a 3-ft.-long straw than through a regular 8-in.-long straw.

The increased air velocity (CFM) from the Vortex Cone allows for a higher level of performance even while the collector is working harder.



QUICK TIP

USE THE SHORTEST LENGTH OF FLEXIBLE HOSE POSSIBLE>
Corrugations in flexible hose generate three times the air flow resistance of smooth pipe of the same length.

4. FUTURE ADDITIONS

When making a purchase, consider future plans for other shop equipment. Buy a dust collector that will be able to perform well for all machines.

Different tools, such as sanders, produce finer particles and a canister filter is more effective at capturing the particles.

QUICK TIP

CONSIDER FUTURE EXPANSION OF YOUR SHOP>
Choose a dust collector with enough capacity to handle suspected future needs.

PERFORMANCE GUIDE

CHOOSE THE PERFORMANCE LEVEL THAT IS SUITABLE TO YOUR NEEDS

DC 1100VX

FEATURING VORTEX CONE™ TECHNOLOGY

	2 MICRON CANISTER	5 MICRON BAG	30 MICRON BAG
PARTICLE SEPARATION	EXCELLENT	EXCELLENT	EXCELLENT
CONTINUAL AIRFLOW	EXCELLENT	EXCELLENT	EXCELLENT
FILTERING MAINTENANCE	EXCELLENT	EXCELLENT	EXCELLENT
DUST COLLECTION CAPACITY	EXCELLENT	EXCELLENT	EXCELLENT
SAWING	EXCELLENT	GOOD	GOOD
JOINTING	EXCELLENT	GOOD	GOOD
PLANING	EXCELLENT	GOOD	GOOD
SHAPING	EXCELLENT	GOOD	GOOD
ROUTING	EXCELLENT	GOOD	GOOD
TURNING	EXCELLENT	GOOD	GOOD
LIGHT SANDING	EXCELLENT	GOOD	FAIR
HEAVY SANDING	GOOD	FAIR	N/R

* N/R = NOT RECOMMENDED

DC 1100

2 MICRON CANISTER	5 MICRON BAG	30 MICRON BAG
FAIR	FAIR	FAIR
GOOD	FAIR	GOOD
GOOD	GOOD	GOOD
GOOD	GOOD	GOOD
GOOD	GOOD	GOOD
GOOD	GOOD	GOOD
GOOD	GOOD	GOOD
GOOD	GOOD	GOOD
EXCELLENT	GOOD	GOOD
EXCELLENT	GOOD	GOOD
EXCELLENT	GOOD	N/A
GOOD	FAIR	N/A

DC 650

2 MICRON CANISTER	5 MICRON BAG	30 MICRON BAG
FAIR	FAIR	FAIR
GOOD	FAIR	GOOD
GOOD	GOOD	GOOD
FAIR	FAIR	FAIR
GOOD	GOOD	FAIR
GOOD	GOOD	GOOD
GOOD	GOOD	GOOD
FAIR	FAIR	FAIR
GOOD	GOOD	GOOD
GOOD	FAIR	FAIR
GOOD	FAIR	N/A
N/A	N/A	N/A

Stock No. 904290
12K 03-2011

Walter Meier (Manufacturing) Inc.
Lavergne, TN 37086 U.S.A.
waltermeier.com

Airflow® SYSTEMS INC.
Leading the way for clean air in the new millennium.

PCH-1

Dimensions

Width: 24.00”
Height: 31.00”
Length: 37.00”

Options

Pressure Gauge Kit:
Indicates when filters require cleaning.

10-ft. E-Z Arm® High Flow Extractor Arm:
Replaces standard 7-ft. E-Z Arm® for additional reach and peak system performance.

Custom Cartridge Media:
Available for specific applications.

After-Filters:
99.97% HEPA, 95% DOP and odor modules.

65-Watt Halogen Light Kit:
Improves worker visibility.

Dual 4 inch Arms:
Provides large area, multi-task collection.

Airflow Systems, Inc.® has a policy of continuous improvement, and reserves the right to change designs and specifications without notice.

Features & Benefits

Complete, Self-contained Unit:
Includes 7-ft. E-Z Arm® High Flow Extractor Arm, blower, and filter cartridge.

Direct-drive Blower:
Higher static pressure, longer filter life and greater reliability; spark resistant; no belts or pulleys to replace.

Non-electrostatic Operation:
High reliability, low maintenance.

Ultra-Seal® Filter Mounting:
Eliminates contaminant bypass of filters.

Vibra-Pulse® Filter Cleaning
System:Cleans filters 75% more effectively than reverse pulse systems.

Low Profile Cabinet:
Low center of gravity for easy maneuverability and arm positioning.

Heavy-Duty, 25-ft. Power Cord:
Maximizes system portability and positioning during operation.

Specifications

Construction:
12/14/16 ga. welded steel, powder coated cabinet

Blower Pkgs (HP):
0.5, 1.0, 1.5

Noise Level (dBA):
65/70/74

Electrical:
0.5 HP - 115/1/60, 9.8 amps, opt.
1.0 HP - 115/1/60, 12 amps, std.
1.0 HP - 208-230/460/3/60, 3.6-3.3/1.7 amps, opt.
1.5 HP - 115/230/1/60, 15/7.5 amps, opt.
1.5 HP 208-230/460/3/60, 4.9-4.6/2.3 amps, opt.

Nominal Air Flow (CFM):
600/800

Weight (lbs.):
255

Airflow® SYSTEMS INC.
AIRFLOWSYSTEMS.com
11221 Pagemill Road • Dallas, TX 75243-8321 USA
Phone: 800-818-6185 • Fax: 214-503-9596

SPECIFICATIONS:

CONSTRUCTION: 12/14/16 Gauge steel cabinet finished with Powder-Coat Finish. Includes a 5 gallon external dust drawer, 7' E-Z ARM® High Flow Extractor arm, removable end cap for easy access to filter, removable panel for easy access to B.I. motor\blower, 8" casters, 25' 12 Ga. power cord, and on-off switch. Motor wired to junction box outside unit for 3 phase. Acoustical lining standard in blower compartment. Vibra-Pulse® cleaning standard.

WEIGHT: 254 lbs.

AIRFLOW:
600 CFM with opt. 1/2 HP motor
700 CFM with std. 1 HP motor
800 CFM with opt. 1.5 HP motor

NOISE:
65 dBA - 1/2 HP
70 dBA - 1 HP

ELECTRICAL:
- ☐ 1 HP 115/1/60, 12 amps, std.
- ☐ 1 HP 208-230/460/3/60, 3.7-3.6/1.8 amps, opt
- ☐ 1.5 HP 115/208-230/1/60, 15/7.9-7.5 amps, opt.
- ☐ 1.5 HP 208-230/460/3/60, 4.9-4.6/2.3 amps, opt
- ☐ 1/2 HP 115/1/60, 9.8 amps, opt

FIRE SUPPRESSION: Equipment provided by others.

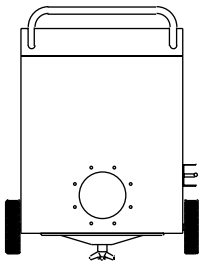
MAIN FILTERS:
- ☐(1) CLEAN-2® Filter cartridge, 16"Dx12", Std.
- ☐(1) Cartridge, FIBERDUST®, Opt.
- ☐(1) Cartridge, Spark Resistant, Opt.
- ☐(1) Cartridge, Spunbond - HO, Opt.
- ☐(1) Cartridge, CleanPlus double treated fire retardent, Opt.

AFTER FILTERS:
- ☐(1) External HEPA filter, 99.97%, Opt.
- ☐(1) External DOP filter, 95%, Opt.
- ☐(1) External adsorber, 18 lb. capacity, Opt.
- ☐(1) Activated Charcoal, Opt.
- ☐(1) Purofil, Opt.

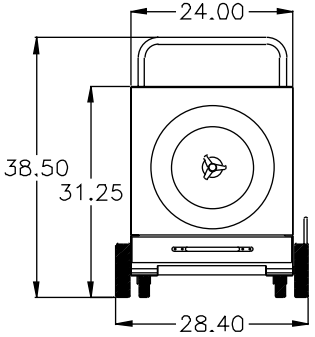
OTHER OPTIONS:
- ☐Pressure gauge kit indicates filter changes
- ☐10' E-Z ARM® High Flow Extractor
- ☐Regulator
- ☐Silencer (Adds 8" to depth of unit)

SPECIAL NOTES: Compressed air filter provided by others.

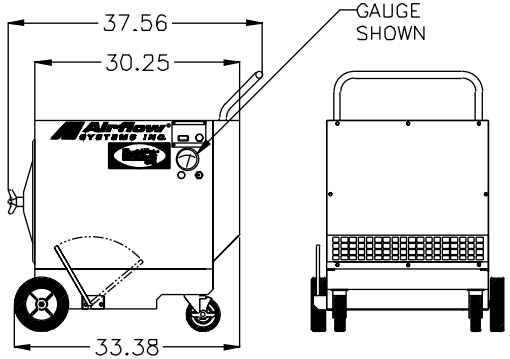
* AFS FILTER EFFICIENCIES BASED ON ASHRAE 52-76 TEST METHOD



TOP VIEW
(SHOWN LESS ARM)

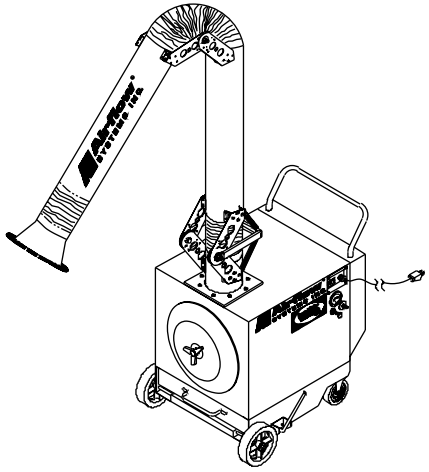


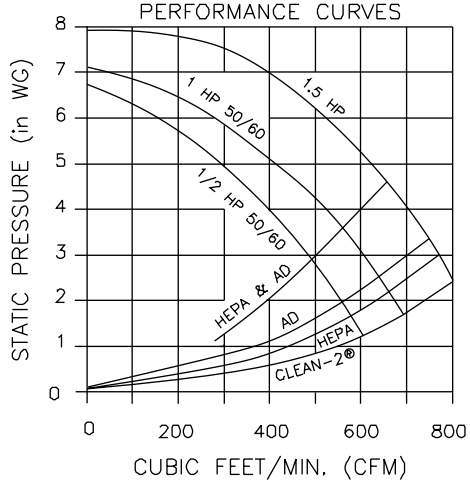
BACK VIEW
(SHOWN LESS ARM)



SIDE VIEW
(SHOWN LESS ARM)

FRONT VIEW
(SHOWN LESS ARM)





NOTES:

Items designated as ☑ are included in this proposal.

Airflow® SYSTEMS INC.
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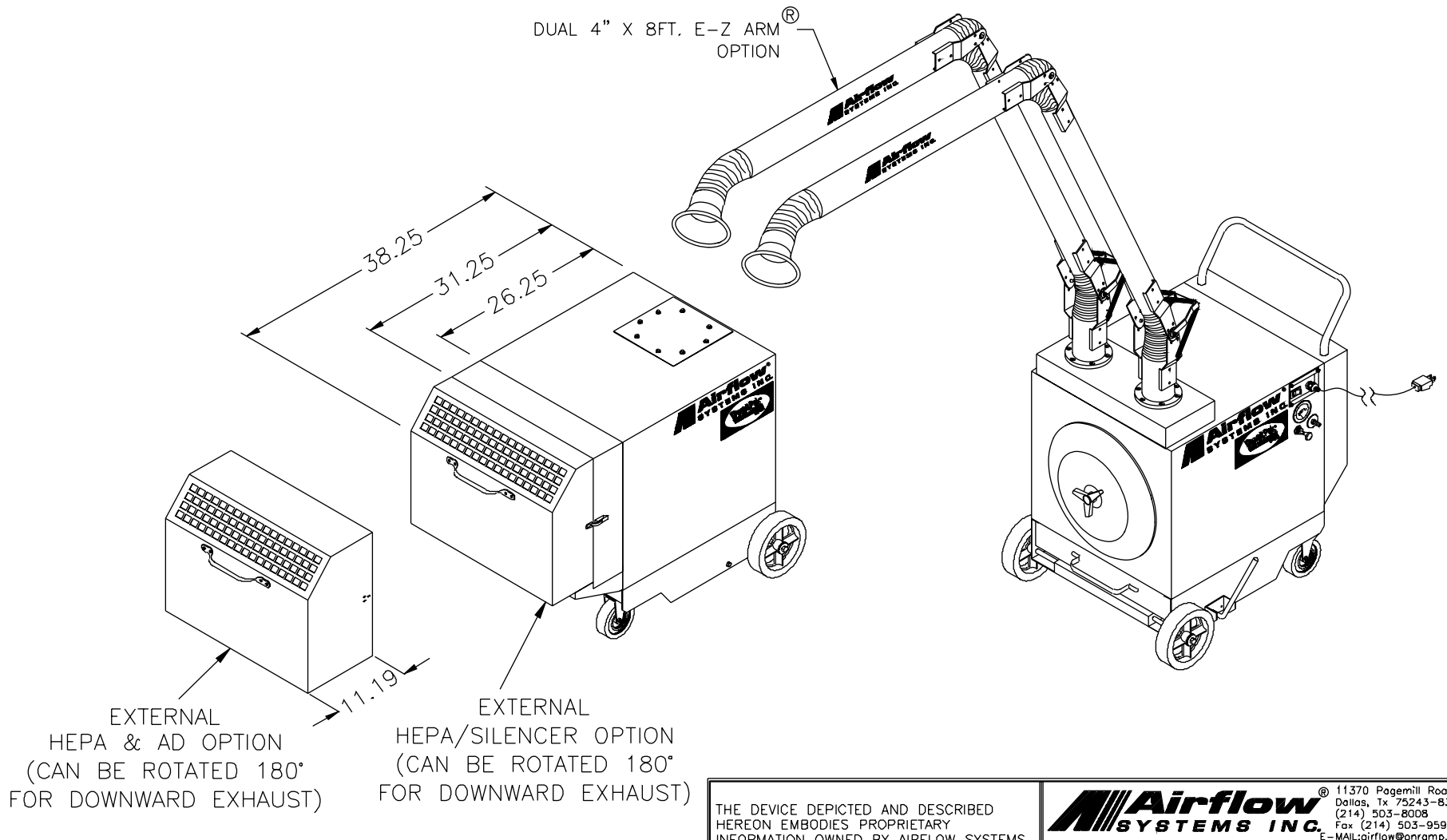
DRAWN BY: CB	TITLE: MODEL PCH1 (CARTRIDGE) PAGE 1 OF 2
DATE: 9-13-02	
SCALE:	DRAWING NO.: PCH1SPEC (51-3672/G)



NOTES:

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DRAWN BY: CB	TITLE: MODEL PCH1 PAGE 2 OF 2
DATE: 9-13-02	
SCALE:	DRAWING NO.: PCH1SPEC (51-3672/G)

Westmatic

Clean & Green

WWR-300

Advanced Water Recycling

WWR-300 Water Recycling With Ozone

Product Description

The system consists of the following:

1. Main recycling unit with pump, cyclones, sensors and filter
2. Submersible pump
3. Ozone generator
4. Buffer tank
5. Electrical cabinet

Water Recycling Process Description

Any traditional bus, truck or train wash uses a great amount of fresh water in the wash and rinse process. Westmatic water recycling systems will recycle up to 85% of the added water for reuse in the wash process. This keeps the usage of fresh water to a minimum. The only fresh water added to the wash process is for the final rinse.

The recycling process begins with filling the wash water buffer tank(s) with fresh water. The water is then used within the wash process. Course particles such as mud, stone and gravel will settle in the wash bay trench. The contaminated water then flows into an in-ground sedimentation tank for further settling. Inside the sedimentation tank, a submersible pump with a liquid level switch will send water to the pump inside the main recycling unit. The contaminated water then passes through the hydro cyclones, where particles down to 5 microns are separated. The recycled grey water then passes through a filter which separates floating particles. On its way back to the buffer tank(s), ozone is added to reduce odour. The separated particles from the hydro cyclones, flows back to the trench, or into the in-ground separation tank.

The process then repeats itself, keeping your fresh water usage to a minimum.

Why Ozone?

Current regulations for the handling of waste water in different recycling systems have placed increased restrictions for using chemical additives such as chlorine and peroxide. In turn, this has led to increased demand for alternate solutions. There are many applications where ozone is more advantageous:

- Odours
- Organic Substances
- Flocking
- Sterilization

Ozone is a strong oxidizer which reacts with a number of different substances. Since it is an oxidizing substance, it decomposes odour molecules and other organic substances. Ozone has other advantages such as flocking of different substances as well as reducing or totally eliminating growth of bacteria, viruses and other organic substances.

Treatment with ozone has proven to be the most effective and environmentally friendly alternative.

Recycling systems not only have economic advantages but major environmental advantages as well.

Waste water turns into clean water in two simple stages.

WWR-165-Compact with ozone generator (44 GPM).

Water Recycling – Stage 1 (WWR-Westmatic Water Recycling)

The recycling system uses stainless steel hydro cyclones for mechanical purification. This fully automatic system, controlled by level regulators, requires minimum maintenance. The water recycling system is manufactured with capacities from 40–300 gallons/minute (165–1200 l/minute) depending on the size of the system. The process can recycle more than 85% of the consumed water. The water is then reused in the wash process. Fresh water is only used in the final rinse. There are no chemicals or other additives utilized - only ozone - which is strongly oxidizing, and has the advantage of not reacting to a number of other matters. The ozone decomposes odor molecules, organic matters and a number of different metals, among other things, that affect water quality. The water can now be reused in the washing process.

Ozone generator.

Environmental thinking does not have to be difficult – this is proven by Westmatic's brilliant water treatment system. The water from the wash is purified in two stages – water recycling and water purification. Westmatic's water treatment system entirely fulfils even the strictest of regulations regarding water quality standards including the rules of the Swedish National Environmental Protection Agency, which are among the most stringent in the world. All parts like the hydro cyclone system, the ozone generator as well as "Renaren" can be delivered separately.

Water Purification– Stage 2 "Renaren"

Water that is not recycled passes through the oil/water separator and into "Renaren". The method is based on electro flocculation which is a technical combination of electro flotation and electro precipitation. No chemical supplements whatsoever are needed during the whole purification process. "Renaren" is so effective that it can reach a purification level of more than 99%. After having gone through the "Renaren", the water can then proceed out into the sewage system.

"Renaren" has proved to be useful in many lines of business where purification of oil-mixed water can occur. It is patent protected and has been DNV certified for ship installations.

Reactor unit for "Renaren".

WWR-300 (80GPM).

Index

1. Enclosure and placement

The Coolflow ozone generator cabinet must be wall mounted vertically in a ventilated area so that ambient air can circulate around the cabinet. The ventilation holes in the bottom and top of one side panel must not be blocked, as air must flow freely through the cabinet.

The generator unit must be orientated vertically so that the Ozone gas output (fig C) is towards the bottom left of the enclosure. This allows the Ozone generator to automatically drain if any moisture should enter or condense in the Ozone generator cell.

The completed Ozone generator enclosure or the PTFE ozone gas supply tubing, must be mounted at least 50cm over the highest level of the water volume being treated. This is a precaution to avoid water siphoning back into the generator unit. Alternatively if an injector device is being used to dissolve Ozone gas into water a <0.35 Bar Ozone compatible check valve can be used.

Components within the Coolflow Ozone generator cabinet are shown in (fig C).

2. Additional system components

The main additional components consist of:

Fully automatic compressed air water and oil separators / pressure regulator fitted with pressure gauge and a 5 micron particle filter.

Airflow sensor set for 4 litres per minute (1,05GPM)

Gas flow on/off valve
Needle valve for regulating feed air or oxygen flow

Electrical interface screw terminals, pneumatic tubing and connectors, ptfe ozone gas tubing and stainless steel connectors.

3. Adjusting operating parameters

Please note before starting the system.

The gas flow rate must be set up. Use only stainless steel and PTFE tubing components between the ozone gas output of the generator and the Ozone gas contacting system. Make sure mains power to the Coolflow Ozone generator is turned off

Start by connecting the ozone gas distribution system to the Ozone gas output in the bottom left corner of the cabinet. If an injector device is being used to mix Ozone gas into a liquid, make sure that when the injectors pump is running and there is no feed gas flowing through the Ozone generator, that no water flows back through the ozone supply tube to the Coolflow cabinet

Fully close the gas flow needle valve and then re-open it one half turn. Close the pressure regulator valve on the water separator (usually pull up and screw fully up = closed). The compressed air supply line with max 8 bars of pressure can now be connected to the feed gas input. Adjust the regulator valve on the water separator to obtain a pressure reading on the inbuilt manometer of 0.5 bar. Press down on the regulator to lock the 0,5 bar pressure setting.

Please note: Avoid contact with the high voltage terminals and cables between the driver board and Ozone generator cell when the Coolflow Ozone generator is powered.

Turn the Ozone generators power on making sure that a 12V to 24V start signal is being given across connector pins 16 and 17 of the controller board. Now slowly open the needle flow valve half a turn and wait for the on/off gas flow valve to click on. Repeat this step opening the needle valve another half turn and waiting for the on/off valve to click, this until the float in the air flow sensor just rises. Now open the valve a further half turn and then secure this setting using the locking nut. Check that the float in the flow sensor is stable in the up position; otherwise slightly increase the flow rate with the gas flow needle valve.

Adjustment of ozone concentration is done using a keyboard connected to the 4 pin keyboard connector on the circuit board (Fig B). The unit is normally supplied adjusted for 60% of the maximum ozone generating capacity. This is usually ideal for odour removal in most car and lorry washer systems. If the ozone concentration is to be adjusted, press the arrow down key while turning the ozone generator power on. The separate lamp on the top left of the circuit board will now change to an orange colour (programming mode). Using the arrow keys the ozone concentration can now be adjusted in 10% steps as indicated by the line of 10 lamps. (Each lamp on = 10% of ozone concentration). Press the OK key to confirm the programmed ozone concentration. Now turn the electrical power off for 10 seconds.

Now when power is supplied to the Coolflow Ozone generator it will wait approximately 15 seconds before starting, this is to allow the airflow sensor to stabilise before starting ozone production.

4. Alarm

A green power on / normal operation lamp is provided on the front panel, this will turn off and the red light will come on if a low gas flow rate alarm occurs. When this happens the ozone generator will shut down. Normal operation will automatically resume when normal gas flow returns.

When a gas flow alarm occurs turn off electrical power to the Coolflow cabinet, now check that the manometer on the pressure regulator is reading 0.5 bar. If there is no pressure check the compressed air feed gas supply to the generator. When an alarm occurs and there is 0.5 Bar pressure present check for a blockage in the Ozone gas supply tubing or injector device.

5. Safety

A “High Voltage Warning” sign should be provided on the exterior of the cabinet.

All personnel having access to areas where Coolflow Ozone generators are installed or
Ozone gas is being used must be informed of relevant safety precautions as required by local government regulations regarding the use of Ozone

Warning High Voltages: Only qualified Electrical Engineers should perform tasks in the Coolflow Ozone generator cabinet.

Avoid contact with the high voltage terminals and cables between the driver board and Ozone generator cell when the Coolflow Ozone generator is powered.

6. Specifications

Fuses.

Internal Power Supply 1.25 AT slow blow.

Coolflow cabinet mains input terminal fuse 2AT slow blow.

Power Supply.

Voltage 230V AC +/- 10%.

Output voltage approx 20V DC @ 30VA.

Coolflow Ozone generator

Voltage 20V DC.

Power 20W.

Controller and driver board relay contacts.

Max 48V @ 2A inductive.

Remote start / stop input signal.

12V till 24V DC or AC @ 15mA (galvanic isolated).

Supply gas (compressed air or oxygen).

Between 2 to 8 litres / minute @ max 0.5 bar to Ozone generator cell.

Ozone production.

0,2 till 2 g/h. Depending on programmed concentration and supplied feed gas quality.

Feed gas & ozone gas connections.

Accept 8 mm outside diameter tubing. Push fit, press to release fittings

Working temperature & humidity

0 till 40 °C.

RH 80% non-condensing.

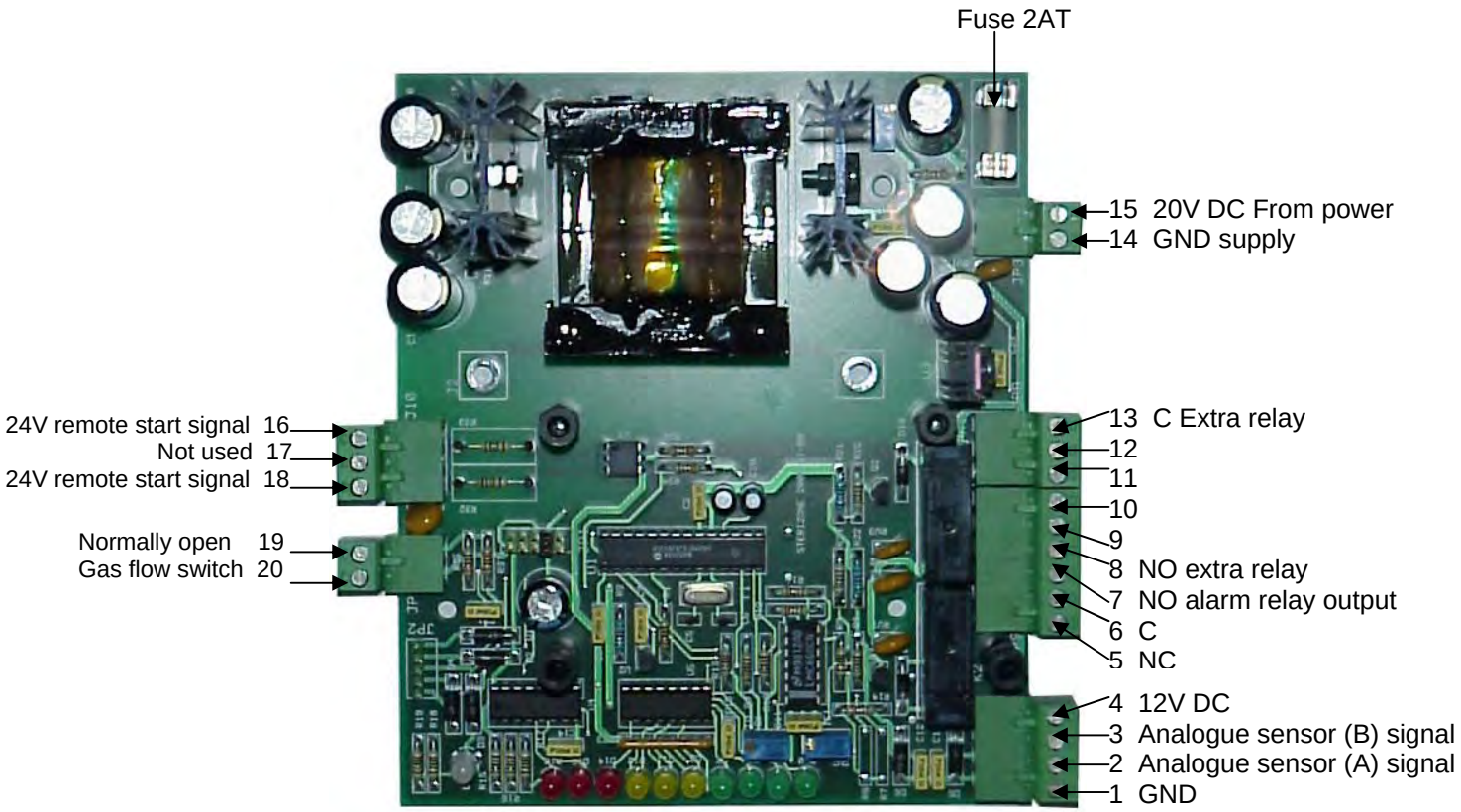
Cabinet Size H 500 x W 400 x D 210.

Weight 20 Kg.

Guarantee

12 months return to factory. Repair or replace.

7. OEM-15 connection overview. Figure A



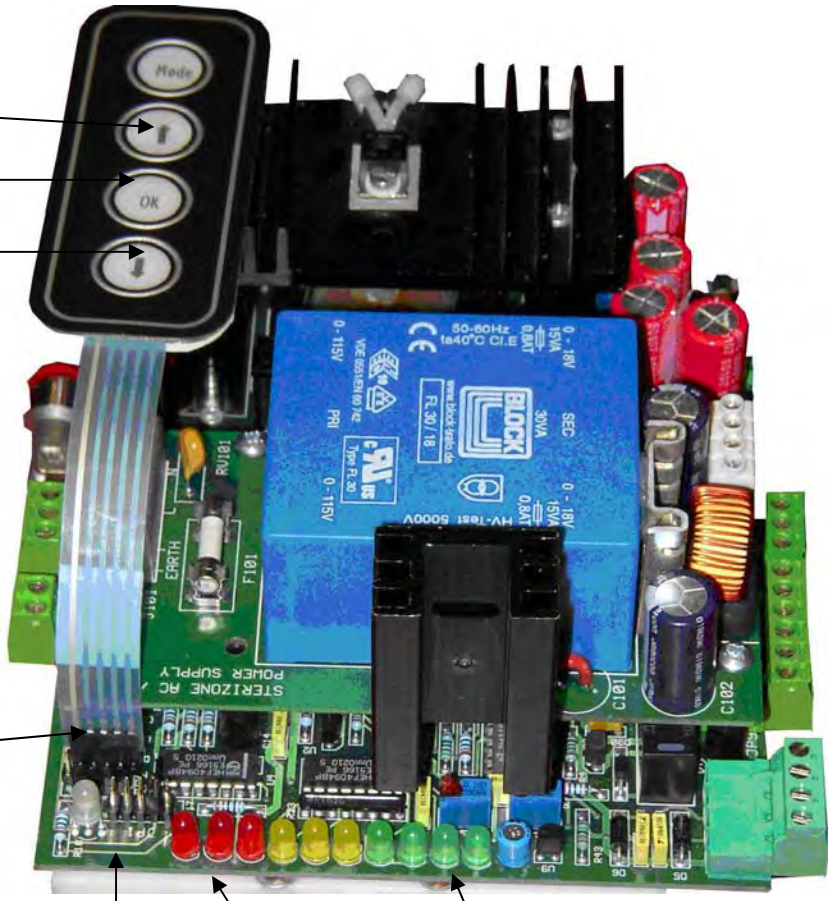
Keyboard and programming lamp. Figure B

Keys used:

Up

OK

Down

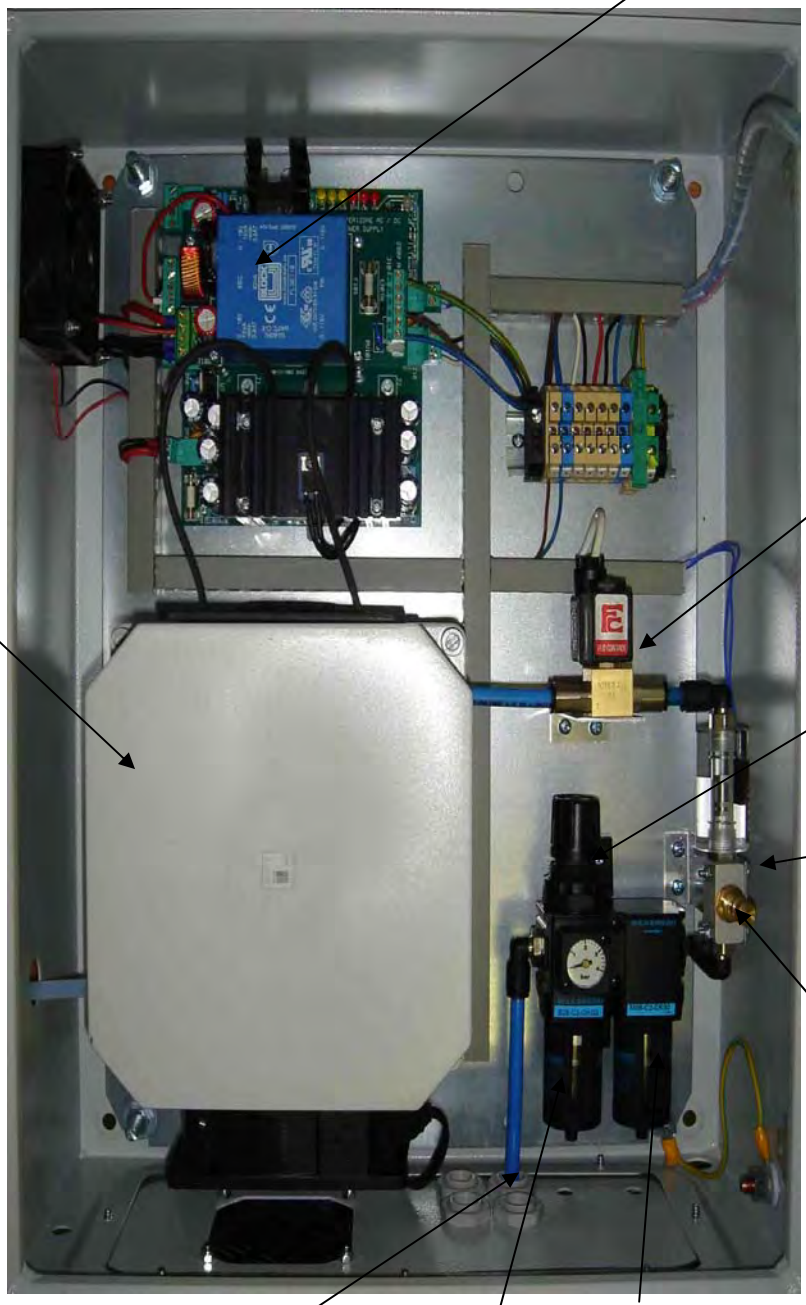


Keyboard connector orientation

Orange lamp

10 lamp bar display

Complete enclosure overview. Figure C



Westmatic
Clean & Green

Section 1: Organization Structure and Experience

A. Manufacturer:

1. Westmatic has been in business as a large automated vehicle manufacturer for 42 years.

2. Since 1974, Westmatic has manufactured and installed large vehicle wash equipment in over 3,000 wash bays worldwide. In doing so, we have developed a reputation for building high quality, innovative, reliable, and environmentally-friendly automatic large vehicle wash equipment. All of Westmatic's North American design, manufacturing, and production take place at our factory in Buffalo, New York. Westmatic's state-of-the-art wash equipment is supported throughout North America by factory trained technicians. A list of systems installed in the last 5 years is attached to this document.

3. The year 2016 celebrated 42 years of business for Westmatic. With decades of experience to learn from, Westmatic continues to be the market-leader in the wash system industry as we continuously find solutions to allow our equipment to best suit the needs of our customers. Our sales, service, engineering and installation / service team are always ready to service your needs.

   Project Management & Installation:

   Project Manager - Josh Polak
   - Advanced education in PLC-Programming, electronics and mechanical engineering
   - Advanced knowledge of SolidWorks, AutoCAD
   - Education at Westmatic Large Vehicle Wash School in Arvika, Sweden
   - Special training in Square D / Telemenquanic TSX Micro/M340 PLC-systems at Schneider Electric
   - ERP-System Specialist
   - Experience installing Westmatic equipment

   Service Coordinator – James Smith
   - New York State certified journeyman welder
   - Trained and certified as Westmatic product expert through an 8 week long personal training period by the Westmatic headquarters' Senior Production Manager
   - Trained and certified in AutoFlow quality management
   - Leads Westmatic's UL listed manufacturing facility
   - Experience installing and servicing Westmatic equipment

   Installation Supervisor/Education and Training – John Hasse
   - Global Vehicle Wash (Westmatic distributor) 2006-2009 (Installation Technician)
   - 10+ Years' experience installing and servicing Westmatic wash systems

Westmatic
Clean & Green

Installation Technician Lead- Adrian Persman

- Senior installation technician at Westmatic Corporation.

*Note, we have six (6) additional factory-direct installation personnel along with numerous Westmatic authorized installation technicians and service technicians throughout the United States.

B. Installation Supervisor:

1. The installation supervisor has directed the installation of automated vehicle wash systems for over 10 years.
2. The number of installations the installation supervisor has directed is approximately 104.

C. Maintenance Structure:

1. The maintenance service for the system will be provided by Westmatic, located in Buffalo, NY.
2. Westmatic has been in the business of large automated vehicle wash maintenance for 42 years.
3. At Westmatic, we not only take pride in our state of the art line of equipment, but our customer service as well. When you purchase a Westmatic large vehicle wash system, you will also receive outstanding service and technical support. Westmatic's installation and service vehicles are fully equipped with parts and tools, allowing us to repair your wash system on our first visit. The point of contact for service is Mr. James Smith. Mr. Smith can be reached at (716) 344-6630, or by e-mail at jim.smith@westmatic.com.

   Westmatic also offers customized Preventative Maintenance Contracts which can be added to any purchase of Westmatic equipment. With a customized service agreement, your equipment will be serviced at regular intervals. This provides extra security against downtime. A Westmatic Preventative Maintenance Contract is an affordable solution which ensures proper care of your equipment which will extend the lifetime of your machine.

Contact Information of Owners/Agencies for Similar Services Performed:

West OX Bus Maintenance Facility

- Fairfax County, VA
- Installed: 2011
- Project Description: Replacement - Supply and installation of 2 new automatic wash systems, dryer / blower systems, wheel wash, and related components.
- Contact: Kris Miller – 703-222-3050 – kris.miller@fairfaxcounty.gov

Walt Disney World | Disney Transportation

- Lake Buena Vista, FL

Westmatic
Clean & Green

- Installed: 2013
- Project Description: Replacement - Supply and installation of 2 new automatic bus wash systems, wheel wash systems, dryer / blower systems and related components.
- Contact: Joe Cunningham – 407-824-5590 – joe.d.cunningham@disney.com

Veolia / TransDev – NICE Bus

- Garden City, NY & Rockville Centre, NY
- Installed: 2014
- Project Description: Replacement - Supply and installation of 3 new automatic wash systems, dryer / blower systems, water recycling systems, wheel wash, chassis wash and related components.
- Contact: Clifford Palma – 516-296-4729 – Clifford.palma@transdev.com

Deerfield Valley Transit Association – DVTA

- Deerfield Valley, VT
- Installed: 2014
- Project Description: Supply and installation of 1 new automatic wash system, water recycling system, dryer / blower system, wheel wash, chassis wash and related components.
- Contact: Randall Schoonmaker – 802-464-6471 – randys@moover.com

Peel-Police - Brampton, ON - 2011 - Roman Husarewych - Brampton, ON

TARTA, OH - Toledo, OH – 2011 - Greg Willson - Toledo, OH

Kanawaha Valley RTA - Charleston, WV – 2011 - Chris Baldwin – Charleston, WV

Hy-Vee - Cherokee, IA – 2011 - Dan Miller – Cherokee, IA

Windsor Transit - Windsor, ON – 2011 - Paul Conrad – Windsor, ON

Port of Seattle - Seattle, WA - 2011 - Doug Bean/Erik Knowles – Seattle, WA

Wright Wisner Distributing - Rochester, NY – 2011 - Jason Heimlich – Rochester, NY

CH Wright Distributing - LeRoy, NY - 2011 - Jason Heimlich – LeRoy, NY

CATA, Little Rock AR - Little Rock, AR – 2011 - Rodney Middleton - Little Rock, AR

Peel Transhelp - Brampton, ON – 2011 - Clayton Penbroeck – Brampton, ON

SPORT TRAN - Shreveport, LA – 2011 - John Toon – Freeport, LA

Barbados International Airport Transit – Barbados – 2012 - John Evans - Barbados

FHI Supply - Oklahoma City, OK – 2012 - Mike Atyia - Oklahoma City, OK

Veolia San Francisco - San Francisco, CA – 2012 - Kevin Taylor - San Francisco, CA

MARTZ Trailways - Wilkes-Barre, PA – 2012 - Aaron Kopa - Wilkes-Barre, PA

Macomb Transit - Macomb, IL – 2012 - Joey Pursell – Macomb, IL

Saskatchewan Regina, SK – 2012 - Warren Fullerton – Saskatoon, SK

Salem-Keizer Transit - Salem, OR – 2012 - Gregg Thompson – Salem, OR

Try-It Distributors - Lancaster, NY – 2012 - Dave Jakubowski – Lancaster, NY

Blue Water Area Transit - Port Huron, MI – 2012 - Dave Frasier - Port Huron, MI

Nanaimo/BC Transit - British Columbia, Canada – 2012 - Jim Pope – Nanaimo, BC

Clallam Transit - Washington - 2012 - Kevin Gallaci - Port Angeles, WA

Cleveland RTA - Cleveland, OH – 2012 - Bruce Piontkowski – Cleveland, OH

West Side Beer - Romulus, MI – 2012 - Fred Zukowski – Romulus, MI

SORTA - Cincinnati, OH – 2012 - Ken Ludlow – Cincinnati, OH

Thunder Bay Transit - Ontario, Canada – 2012 - Glenn Ellis - Thunder Bay, ON

Bob Evans Trucking - Columbus, OH - 2012 - Kirk Frazee – Springfield, OH

Stevens Point - Stevens Point, WI – 2012 - Joel Lemke - Stevens Point, WI

GO-Transit - Ontario, Canada – 2012 - Kumar Kanapathipilla – Oshawa, ON

Veolia Vaughan - Ontario, Canada – 2012 - Jason Barnett – Vaughn, ON

Sioux Falls - Sioux Falls, SD – 2012 - Brett Roemen - Sioux Falls, SD

HART - Tampa, FL - 2012 - George Hauck - Tampa, FL

Newington - Lorton, VA – 2013 - Shannon Kualii – Lorton, VA

Ocean Trailer - British Columbia, Canada – 2013 - Sid Keay – Delta, BC

Silver Eagle Distributors - San Antonio, TX – 2013 - Stan Corson - San Antonio, TX

Truck Wash Express - Williston, ND - 2013 - Chris Storm – Williston, ND

M&M Junction - Limestone, NY – 2013 - Renee Wealfall – Limestone, NY

Jack's Truck Wash - Prince Edward Island, Canada – 2013 - Jack Kelly – PEI, CA

Ryde Transit - Kearney, NE – 2013 - Brad Myers – Kearney, NE

Coach USA - Chester, NY – 2013 - Frank Grange – Chester, NY

CT Transit - Hartford, CT – 2013 - Frank Kolakowski – Hartford, CT

TTC Malvern - Toronto, ON - 2013 - Geoff Evans - Toronto, ON

Aldine ISD - Aldine, TX – 2013 - Dennis Cox – Houston, TX

Terrabonne Parish - Houma, LA – 2013 - Wendell Voisin – Houma, LA

DCTA - Denton, TX – 2013 - Ed Ewell – Denton, TX

City of Port Arthur - Port Arthur, TX - 2013 - Craig - Port Arthur, TX

Green Bay Transit - Green Bay, WI – 2013 - Mike Sidlauskas - Green Bay, WI

Brunswick Schools - Brunswick, OH - 2013 - Robert Kelly – Brunswick, OH

Cabell County - Lesage, WV – 2014 - Dave Reppella – Lesage, WV

MVTA - Eagan, MN – 2014 - Al Lesnau – Eagan, MN

Sudbury Transit - Sudbury, ON – 2014 - Roger Sauve – Sudbury, ON

Bethel Schools Transportation - Spanaway, WA – 2014 - Jason Swanson – Spanaway, WA

YRT / VIVA Richmond Hill - Richmond Hill, ON – 2014 - Peter Aw - Richmond Hill, ON

START Transit - Jackson, WY – 2014 - Chris Holt – Jackson, WY

Pine Bluff Transit - Pine Bluff, AR – 2014 - Ken Blackwell - Pine Bluff, AR

Corpus Christi - Corpus Christi, TX – 2014 - Jose Touar - Corpus Christi TX

Springfield PVTA - Springfield, MA – 2014 - Charlie Sereda – Springfield, MA

Metrolinx - GO Willowbrook Rail - Toronto, ON – 2014 - Roy Padovani – Toronto, ON

State College Maintenance Facility - State College, PA - 2014 - Dave Weidel - State College, PA

DVTA - Wilmington, VT – 2014 - Randy Schoonmaker - Wilmington, VT

Silver Eagle Distributors - Pasadena, TX – 2014 - Stan Corson – Pasadena, TX

Newington DVS - Lorton, VA – 2014 - Shannon Kualii – Lorton, VA

Michael Giasson Transport (DeCastel) - St. Hyacinthe, Quebec – 2014 - St. Hyacinthe, QC

KCATA - Kansas City, MO – 2014 - Lesa George - Kansas City, MO

NICE Bus / Veolia NYC - New York, NY – 2014 - Ken Ragone - Garden City, NY

YRT / VIVA Newmarket - Newmarket, ON – 2014 – Newmarket, ON

Walt Disney World - Orlando, FL – 2014 – Joe Cunningham - Lake Buena Vista, FL

Wood Buffalo Transit - Ft McMurray, AB – 2014 - Ajay Mehra - Fort McMurray, AB

Huntington (Fairfax) - Lorton, VA – 2014 - George Brennan - Lorton, VA

Titan Equipment - Watertown, SD – 2014 - Ted Thompson- West Fargo, ND

MTA NYC Baisley Park - New York, NY – 2014 - Arvinder Atwal – Queens, NY

EMTA Erie Metropolitan Transit Authority - Erie, PA – 2015 - Mark Cox – Erie, PA

Allen ISD - Allen, TX - 2015 - Jerry Jones - Allen TX

Great Bay Budweiser - Lakeland, FL - 2015 - Dennis Walsted – Largo, FL

Spokane Transit - Spokane, WA – 2015- Jacque Tjards- Spokane, WA

Randy's Diesel - Carroll, IA – 2015 - Randy Bruhn – Carroll, IA

Charlesbourg Garage (DeCastel) - Quebec, Canada – 2015 - De Castel - Quebec City, CA

Shawnee Mass Transit - Vienna, IL – 2015 - Ronald Stout – Vienna, IL

NICE Bus / Veolia NYC - Rockville Centre New York, NY - 2015 - Ken Ragone - Rockville Centre, NY

Butte Transit - Chico, CA- 2015 – Chico, CA

MARTA Laredo - Atlanta, GA - 4-Brush TM – 2015 – Atlanta, GA

City of Barrie DPW - Barrie, ON – 2015 – Barrie, ON

Ozark Transit - Springdale, AR – 2015- Springdale,AR

Barrie Transit - Barrie, ON – 2015 – Barrie, ON

Valley Transit - Boise, ID – 2015 – Boise, ID

Perras Lands - Ft. McMurray – 2015 - Fort McMurray, AB

Wappingers School District - Wappinger Falls, NY – 2015 - Wappinger Falls, NY

Go – Aberfoyle - Puslinch, ON – 2015- Puslinch, ON

New Prairie Schools - New Carlisle, IN – 2015 - New Carlisle, IN

Lamar Schools - Houston, TX – 2015 – Fulshear, TX

Essen Transport - Winkler, MB – 2015 – Winkler, MB

Mears Transportation - Orlando, FL – 2016 – Orlando, FL

MARTA Brady Mobility - Atlanta, GA – 2016 – Atlanta, GA

Manatee County Transit - Bradenton, FL – 2016 – Sarasota, FL

Elmira Schools - Elmira, NY - 2016 – Elmira, NY

Western Bus Sales - Boring, OR – 2016 – Boring, OR

Blacksburg Transit - Blacksburg, VA - 2016 - Blacksburg, VA

MARTA Perry - Atlanta, GA - Pending Completion

GLTC - Lynchburg, VA – Pending Completion

WRTA- Worcester, MA – Pending Completion

Lummi Reservation - Bellingham, WA - Pending Completion

Strick Trailers - Monroe, IN - Pending Completion

Calgary Transit - Calgary, AB - Pending Completion

Hilo - Hilo, HI - Pending Completion

GHTD - Hartford, CT - Pending Completion

Durham Regional Transit - Oshawa, ON - Pending Completion

Clayton County School District – Jonesboro, GA – Pending Completion

Some Ozone Facts

- 90% of the world's drinking water, including most bottled and municipal water, is treated with ozone to kill germs and bacteria.

- Ozone acts 3000 times faster than chlorine and is the strongest oxidant commercially available for water treatment.

- There is simply no better way to truly purify water (and food) than with ozone.

- 99% percent of all bacteria in drinking water can be killed with ozone water treatments.

- Cyclone and centrifugal filters do not kill any bacteria in water. They only remove solid compounds and do not purify, meaning bacteria that causes odors stays present in the water.

Frequently Asked Questions

What is the purpose of adding Ozone to water?
Ozone is added to water to kill diseases, bacteria, and viruses. It will also help eliminate chlorine, pesticides, and other toxic chemicals found in water.

Does Ozone filter water?
No, ozone does not replace a water filter. In fact a water filter should be placed before the ozone generator to remove particulate matter from the water.

Will Ozone remove chemicals from water?
Ozone will make some chemicals inert in water as it does chlorine. However if there are strong chemical contaminants in the water ozone should not be counted on to remove them.
It all depends upon the level of contamination in the water as to how effective ozone will be in making chemicals inert. If you think there are chemicals in your water you should have it tested.

Does ozone add anything to the water?
Ozone is 100% Oxygen. That is all it's adding to the water. It is perfectly safe to drink ozonated water.

If ozone doesn't filter or soften water why should I use it?
Because ozone will kill bacteria and viruses. Ozone should be the final stage in water treatment to ensure your water is free from odor causing bacteria.

Which is better, adding ozone, reverse osmosis, filtering or distillation of water?
All these methods perform different functions in water. No matter what method you choose it is still a great idea to ozonate water as the last stage of purification to ensure water is free from bacteria and viruses.
The FDA has approved the use of water to help cleanse food, and all bottled water in the United States is ozonated.

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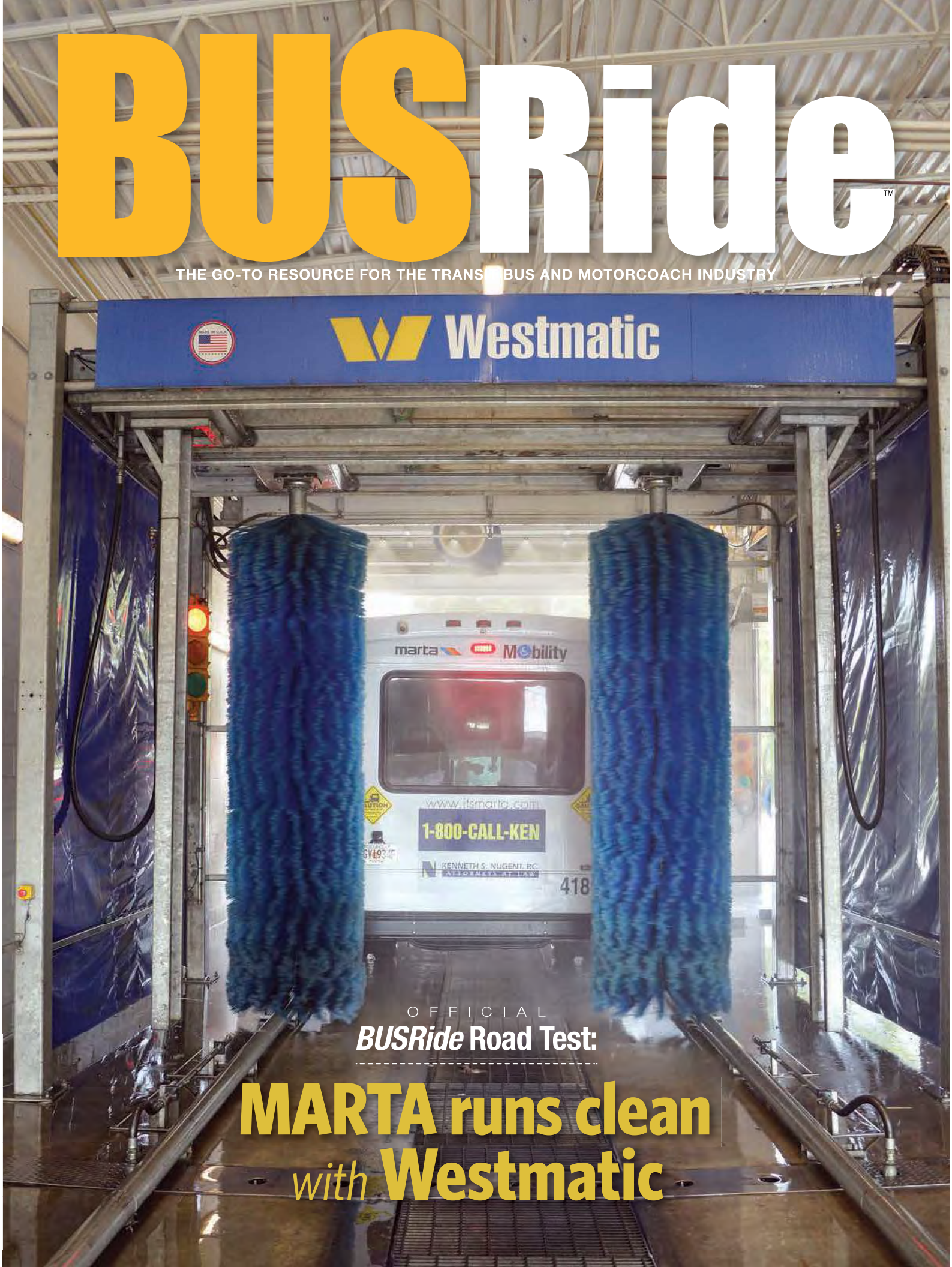


OFFICIAL

***BUSRide* Road Test:**

MARTA runs clean *with* Westmatic

Westmatic Blower/Dryer System at MARTA Brady Mobility Center

MARTA runs clean *with* Westmatic

The Atlanta agency and Westmatic teamed to retrofit wash systems into two existing facilities, and install a system into a newly-built garage

By Richard Tackett

For the Metropolitan Atlanta Rapid Transit Authority (MARTA) in 2015, replacing bus wash systems in its multiple maintenance locations was a matter of necessity. The systems at MARTA's Perry and Laredo facilities were each 25 to 30 years-old, well past their usable life, and were beginning to break down. The systems were becoming costlier to operate than replace, and in some cases MARTA employees had to resort to hand-washing buses after wash system failures.

"Those systems had been installed since the buildings around them were constructed," says Remy Saintil, director of facilities at MARTA. "They weren't very efficient regarding conservation. We often dealt with streaks, and other issues relating to the wash quality of our buses."

Furthermore, the agency was designing a new maintenance property – the Brady Mobility facility. For a brand-new facility, it was critical that MARTA obtain wash systems that reflected its sterling reputation in the Atlanta area and across the transit industry. MARTA is one of the top 10 transportation agencies in the U.S. With a fleet of over 500 buses, maintenance and cleanliness is a priority.

Saintil says MARTA was looking for a more modernized system which would provide better overall wash quality and significantly more water conservation. After a research process, the agency settled on new systems from Westmatic Corporation, Buffalo, NY.

The Westmatic system

MARTA sought a machine that is more efficient in the way it uses water, chemicals and electricity. Less consumables means lower operating costs.

Westmatic's systems are made in America and were designed for the Scandinavian and other European markets where, on average, the cost for consumables like water, chemicals and electricity are up to four times higher than in the United States.

"Because we utilize those European standards and designs, our systems are incredibly efficient compared to other systems being delivered in the United States. We pride ourselves on manufacturing and supporting equipment that has the lowest life-cycle cost of any machine on the market today." says Steve Wawro, president of Westmatic Corporation.

Not only are Westmatic's machines incredibly efficient – they're also incredibly compact. This makes their systems very attractive for new buildings, where agencies can often drastically reduce space requirements for new builds. Agencies can cut construction costs, which is perfect for sites needing a retrofitted system – such as MARTA's Perry and Laredo facilities.

Westmatic manufactures its own recycling equipment and has its own water purification system, which Wawro says the company hopes to introduce more and more into the states as environmental regulations become more stringent. In Europe and Scandinavia, water must not only be recycled – it must be purified before entering sewage systems.

Dual Westmatic Transit-Master wash systems at Perry Garage

"For most public transit agencies, we install drive-through systems," Wawro says. "For MARTA and some other agencies, we've developed an innovative design – a brush machine that safely and effectively washes the front-ends of buses with front-mounted bicycle racks."

In traditional machines, drivers are directed to drive through the entire machine without stopping, which means the vehicle drives into the brushes and pushes them away. Wawro says this isn't ideal, because it relies on a driver to drive through at a certain pace. Too much reliance on driver judgement can damage wash systems and vehicles. For example, some vehicles suffer windshield or mirror damage from hitting the brushes too fast.

In the Westmatic system, drivers are directed to stop by a traffic light. The brushes then automatically come to the bus, so there's less risk of vehicle damage. This controlled method results in safer and more consistent wash results. In MARTA's system, split-length mounted brushes wash above the bike rack, alleviating concerns for damages to the windshield, bike rack, or machine itself.

Once those brushes retract and the driver gets a green light, the driver is directed to drive through and then directed once more to stop. Then, the system washes the rear of the bus with full-length brushes. Westmatic brushes are unique in that they truly overlap, so they don't leave any area of the front or rear of the bus untouched.

"Even though we direct the bus to stop twice, it does not increase the wash cycle time beyond 90 seconds – an industry standard for washing buses in a drive-through machine," Wawro says.

By installing Westmatic's drive-through machines, MARTA could free up a lot of usable space in its wash bays, Saintil says.

"It allows us to reallocate that space toward other storage needs as they arise."

Purchase and installation

Westmatic's presentation, at a time when the agency was looking at several types of washing equipment, impressed MARTA officials. They classified the bus wash as a Capital Improvement Program (CIP) and selected three sites for installations: retrofits of the existing Perry and Laredo facilities, and a new system for the in-design Brady facility.

"We had a senior bus maintenance technician that had worked with Westmatic at a different bus authority," says Mark Harclerode, senior project manager at MARTA. 'For the most part, it was a very positive experience."

Harclerode oversees the project managers responsible for a sizable portion of MARTA's CIP. This includes everything from bus facility upgrades to full facility rehabilitation.

"Other references I checked were also positive," Harclerode says. "Everyone said the system runs well as long as maintenance is kept up-to-date."

Westmatic won the bid process, though MARTA handled each facility's purchases differently.

"For the Perry and Laredo sites, MARTA decided that they wanted Westmatic," Wawro says. "To ensure they got the quality of equipment they wished to procure, MARTA elected to buy direct through a Georgia state cooperative purchasing program."

The cooperative purchasing program, known as the National Joint Powers Alliance (NJPA), gave MARTA the ability to directly purchase their preferred equipment at an already competitive bid price. Using NJPA ensures the owner will receive exactly what they are looking for and what was recommended based on their fleet configurations and options.

"It was a turn-key purchase," Wawro continues. "When they purchased our new equipment, they also purchased the demolition of the existing equipment and systems in there. They purchased the installation of the new equipment along with the plumbing work, the electrical work, and all the final startup, testing, training and commissioning for those systems."

For the new Brady garage, Westmatic worked closely with one of MARTA's consulting firms – Maintenance Design Group (MDG). At that time, MARTA already knew of Westmatic and the Perry and Laredo projects were underway. As a contractor for the facility, Archer Western Construction procured the washing systems. In this way, Wawro says the Brady garage was a project that Westmatic was involved with "from the ground up."

The Perry and Laredo garage design work and installations occurred over about two years – including the installation of five machines and the full project of demolition, obtaining permits and licenses, and other necessary work.

Wawro says that retrofitting the water recycling system presented a unique challenge at the Perry and Laredo facilities.

"There were a lot of unknowns, as far as the underground mechanical work that needed to be done to ensure proper water flow at the Perry and Laredo sites," he says. "We hired a team

Westmatic Transit-Master at Perry Garage

Westmatic Blower/Dryer systems at MARTA Laredo

of engineers to X-ray, scan, and test the existing wash bay to figure out the flow of the water. We had to cap a few lines and integrate a few new lines, but we were able to accomplish these tasks successfully."

The new Brady garage was a one-year project, from date of order through fabrication, delivery and installation of the bus washing systems.

Once all the systems were energized, Westmatic's factory-direct personnel visited MARTA and gathered bus drivers and other personnel who use the system for training. Over the course of a week, MARTA's drivers test-drove the system while garage personnel studied system and component maintenance.

Clean results

MARTA officials say they're impressed with the wash quality of the Westmatic systems.

"The people using the system are, overall, happy with it," Harclerode says. "Westmatic did an excellent job training our staff, and I haven't got any negative feedback on the cleanliness of the buses. This project was a success."

Compared to MARTA's older systems, the Westmatic bus washes deliver better cleaning performance on both the front and rear-ends of agency buses. Furthermore, the system is far less maintenance-intensive than the older systems, and consumables like detergents and water are reduced.

"The efficiency of these systems is extremely important," says Steve Perry, superintendent of bus maintenance at MARTA. "These systems save a lot of time, and we get the clean end-result that we're looking for."

"No one wants to see dirty buses driving out of our facilities," adds Samir Sheth, MARTA engineer. "It's a matter of customer satisfaction, as our customers are tax-paying stakeholders. That's also why MARTA has a quality control system department, ensuring all buses are clean – inside and out."

By procuring a system that can consistently and thoroughly clean buses to optimal results, Wawro says that MARTA is in a great position to increase customer satisfaction and even ridership.

"MARTA's customers will feel confident that the vehicle they're entering is safe and properly maintained, and that all starts with the vehicle's clean image," he says. "That's the kind of value that an efficient, well-maintained wash system can bring." BR

Dual Reclaim water recycling systems at MARTA Perry

GREAT FALLS CONSTRUCTION

March 29, 2018

William Faucher, P.E.
160 Veranda Street
Portland, ME 04103
Ph. 207.221.2260
Fax 207.221.2266
www.allied-eng.com

Regarding: Windham Shared Vehicle Maintenance Facility
Windham, ME
Date Acknowledgment and clarifications with attached proposed schedule

Dear Bill,

We wanted to extend our sincere appreciation for choosing to enter into negotiations with Great Falls Construction for the Design/Build project of the Windham Shared Vehicle Maintenance Facility.

Great Falls Construction is a quality driven company making our first objective to always consider the *quality to value* analysis and to provide the very best products and construction methods that can be sustained by the stated budget. We believe the Town of Windham will be pleased with the finest industrial/commercial components we could assemble.

Great Falls acknowledges the schedule requirement of August 15, 2018 for base paving and workable block heater stations.

We understand there is an internal process to complete prior to the issuance of a contract, however timely ordering of the pre-engineered buildings, anchor bolts and reinforcing steel is paramount when considering the schedule and the availability and volatility of steel. Is it possible to issue a letter of commitment for the project in its entirety or at a minimum in the amount of $58,424.00 which will allow Great Falls to pre-order the items below?

GREAT FALLS CONSTRUCTION

	Total	10% Deposit
PEMB for the combined use building	$432,544.00	$43,254.40
PEMB for the cold storage building	$ 52,982.00	$ 5,298.20
Reinforcing steel	$ 89,756.00	$ 8,975.60
Anchor bolts	$ 8,962.00	$ 896.20
Total	$584,244.00	$58,424.40

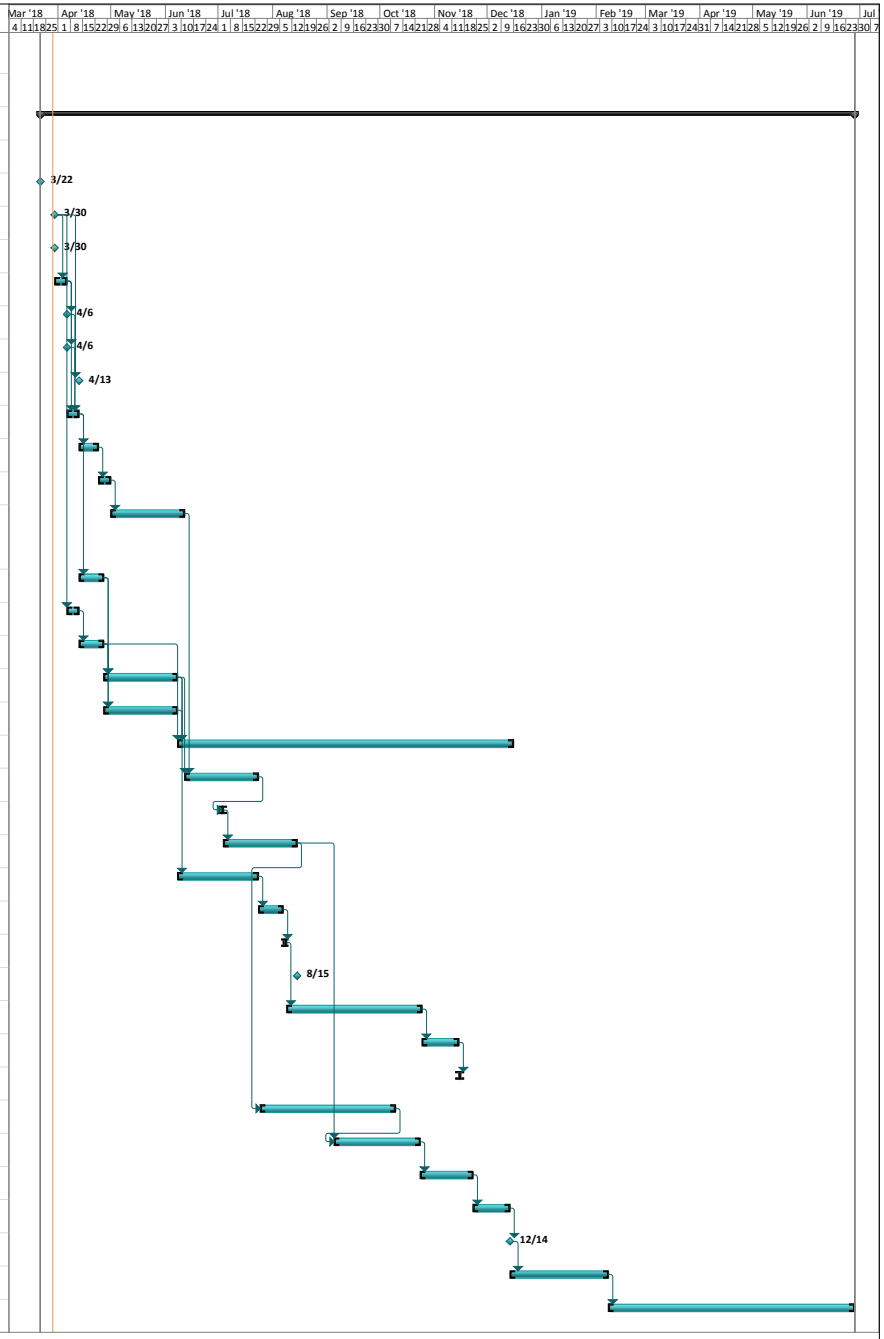
In conclusion, the Great Falls Team is looking forward to a successful project and we thank you for the opportunity to serve the Town of Windham.

Todd Desmarais Sr.

Project Executive

20 MECHANIC STREET, GORHAM, ME 04038 PH (207) 839-2744 FAX (207) 839-3737
www.greatfallsinc.com

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Notes
1		**Proposed Schedule for Windham Public Works Facility**					
2							
3			**331 days**	**Thu 3/22/18**	**Thu 6/27/19**		
4							
5		Bid submittal	0 days	Thu 3/22/18	Thu 3/22/18		
6		Project award / letter of intent	0 days	Fri 3/30/18	Fri 3/30/18		
7		DEP permit	0 days	Fri 3/30/18	Fri 3/30/18		
8		Finalize foundation and PEMB submittials	5 days	Fri 3/30/18	Thu 4/5/18	6	
9		**Submit foundation plans for approval**	**0 days**	**Fri 4/6/18**	**Fri 4/6/18**	**8**	GFC has these drawings ready
10		**Submit PEMB A/B plans and reactions for approval**	**0 days**	**Fri 4/6/18**	**Fri 4/6/18**	**8**	GFC has these drawings ready
11		**Submit reinforcing steel drawings for approval**	**0 days**	**Fri 4/13/18**	**Fri 4/13/18**	**6FS+10 days**	GFC has these drawings ready
12		Foundation, reinforcing and AB submittals returned	5 days	Fri 4/6/18	Thu 4/12/18	8,9,10	Verify with AEI
13		PEMB details and drafting submittal prepared & Submitted	7 days	Fri 4/13/18	Mon 4/23/18	12	
14		PEMB submittal review	5 days	Tue 4/24/18	Mon 4/30/18	13	Verify with AEI
15		Building fabrication and delivery	30 days	Tue 5/1/18	Mon 6/11/18	14	
16		Reinforcing steel fabrication and delivery	10 days	Fri 4/13/18	Thu 4/26/18	12	
17		Mobilization (GFC and Site Contractor)	5 days	Fri 4/6/18	Thu 4/12/18	6FS+5 days	
18		Excavation, clear and grub	10 days	Fri 4/13/18	Thu 4/26/18	17	
19		Foundation excavation/backfill/forming and placing	30 days	Fri 4/27/18	Thu 6/7/18	16,18	
20		Deep UG utilities	30 days	Fri 4/27/18	Thu 6/7/18	16,18	
21		All other site work	137 days	Fri 6/8/18	Sat 12/15/18	18,19,20	
22		Building Erection/weather tight	30 days	Tue 6/12/18	Mon 7/23/18	15,19	
23		Place mezzanine slab	1 day	Tue 7/3/18	Tue 7/3/18	22FS-15 days	
24		Wood frame construction weather tight	30 days	Wed 7/4/18	Tue 8/14/18	23	
25		Underground utilities/trench drains etc.	32 days	Fri 6/8/18	Mon 7/23/18	19	
26		Slab Prep	10 days	Tue 7/24/18	Mon 8/6/18	25	
27		Place slab	2 days	Tue 8/7/18	Wed 8/8/18	26	
28		Base pave and block heaters for use	0 days	Wed 8/15/18	Wed 8/15/18		
29		Painting, mechanical, electrical,equipment, startup	55 days	Thu 8/9/18	Wed 10/24/18	27	
30		Contingency/weather	15 days	Thu 10/25/18	Wed 11/14/18	29	
31		**Partial occupancy permit inspection**	**1 day**	**Thu 11/15/18**	**Thu 11/15/18**	**30**	
32		Interior framing/rough in and insulation	55 days	Wed 7/25/18	Tue 10/9/18	24FS-15 days	
33		Drywall and painting	35 days	Wed 9/5/18	Tue 10/23/18	24,32FS-25 days	
34		Finshes and systems	22 days	Wed 10/24/18	Thu 11/22/18	33	
35		Contingency/weather	15 days	Fri 11/23/18	Thu 12/13/18	34	
36		**Partial occupancy permit inspection**	**0 days**	**Fri 12/14/18**	**Fri 12/14/18**	**35**	
37		Move office space	40 days	Fri 12/14/18	Thu 2/7/19	36	
38		Phase 2	100 days	Fri 2/8/19	Thu 6/27/19	37	



Project: Proposed Schedule for W
Date: Thu 3/29/18

Task | Summary | External Milestone | Inactive Summary | Manual Summary Rollup | Finish-only
Split | Project Summary | Inactive Task | Manual Task | Manual Summary | Deadline
Milestone | External Tasks | Inactive Milestone | Duration-only | Start-only | Progress

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TO: **ALL MESCO BUILDERS AND CUSTOMERS**
SUBJECT: **Steel Price Increase**
DATE: **March 28, 2018**

Steel mills have continued to increase prices significantly over the past month. The CRU cost per ton of basic hot roll steel has increased $109 per ton over the past four weeks alone. In addition to the Sec. 232 tariffs being implemented on imported steel, market conditions have tightened, and steel mill lead times are extending. We anticipate that steel prices will continue to rise, and further increases could materialize over the next four to six weeks.

To help keep the pricing versions in line:

- Elite 6.7.9 pricing will be honored provided the project ships by April 13, 2018.
- Elite 6.7.9.1, 6.7.9.2 & 6.7.10 pricing will be honored provided the project ships by May 25, 2018.
- Elite 6.7.11 & 6.7.12 pricing will be honored provided the project ships by June 29, 2018.

To remain current with rising material costs, we are announcing a price increase of 4%, depending on product mix, effective April 9, 2018; with the introduction of Elite 6.7.13.

We encourage you to protect your business and your customers by getting orders pushed through in this market. We strive diligently to be a good partner to our Builders, and although the market has become increasingly volatile, we remain committed to providing exceptional quality and service at a competitive price. If you have any questions or concerns regarding this announcement, please contact your District Sales Manager to discuss further.

Sincerely,
Mesco Building Solutions

Steve F. Heil, P.E., President