



# DAVIS PRECISION DESIGN, INC.

ENGINEERING SERVICES

DESIGN

DRAFTING

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## Frequently Asked Questions

### Can you provide references?

Yes. We will provide, on request, a list of companies we have done work for.

### How are you paid?

The most common arrangement is on an hourly basis, with monthly billing. We can usually provide a good estimate before starting of how many hours a particular project will take. All invoices include a detailed list of what type of work was done. We strive to make our billing straightforward and easy to understand—you won't have to scratch your head and wonder what you are paying for.

Some projects are quoted on a total fixed cost basis. These are usually jobs that are very clearly-defined such as drafting work or parts manuals.

We will always work to provide you with the best value and the fewest surprises.

### Can you spec and source the purchased components for a design?

Yes! We are not affiliated with any distributor or manufacturer, so we can recommend the best source based on your requirements, not on what we need to sell. We can often provide multiple sources for components and will always provide you with complete documentation for anything we specify. We will work with your purchasing department to keep their workload to a minimum.

### How do you handle communication?

We like to begin and end a job with face-to-face meetings whenever possible, but modern electronic communication tools like e-mail and fax mean that you pay for productive work instead of travel time. We routinely e-mail or fax concept sketches, drawings, and photos during the project.

## **List of Engineering Projects**

### **Mertz Boxer**

see it at:

[www.boxerok.com](http://www.boxerok.com)

DPD team members: Jess Davis

This is a new mini-skid-steer loader equipped with rubber tracks and a 24hp Honda engine. It competes with the Dingo, Ramrod, and Kanga products. We designed the loader arm system, the rubber-tracked undercarriage, and assisted in the hydraulic system design. This product is also sold as the PowerHouse Prowler.

### **CTI Roto-Trimmer**

see it at

[www.construction-tech.com](http://www.construction-tech.com)

DPD team members: Jess Davis, Ron Major

This is a large, loader-mounted rotary-drum rock grinder. We work with CTI on an ongoing basis to design and document the various cutters and engine power units. Horsepowers range from 350 hp to 600 hp, and cutting widths range from 6 feet to 12 feet. We also developed CTI's part numbering system and their Bill of Material system.

### **Fox Products 673 Scraper**

see it at:

[www.foxproducts.com](http://www.foxproducts.com)

DPD team members: Jess Davis, Ron Major

This is a self-propelled elevating scraper with a capacity of 7 yards. We did the design of the scraper, designed the modifications to the Caterpillar power unit, and assisted in the design of the jigs and fixtures. The project also included development of a part number system, bill of material system, implementation of manufacturing software, and assisting in the development of marketing materials.

*Construction Equipment* magazine honored this machine as one of the 100 most significant products introduced in 2002.

### **Fox Products 412 Landscape Tractor**

see it at:

[www.foxproducts.com](http://www.foxproducts.com)

DPD team members: Jay Bartel, Ron Major, Jess Davis, Ricky Heflin

This is an ongoing project to develop a small 4-wheel drive tractor with a front-end loader and rear 3-point hitch and box blade. Designed to compete against the Case 570 and the Deere 210, it will feature a Caterpillar drivetrain. We have been responsible for the design of the entire tractor including the loader, ROPS, and operator's platform.

### **Waldon 7500 Loader**

see it at:

[www.mobileproductsinc.com](http://www.mobileproductsinc.com)

DPD team members: Jess Davis, Ricky Heflin, Ron Major (as employees of Waldon, Inc.)

This is a small (13,000#, 1.38 yard) construction loader project that was pretty much a clean-screen design. Intended to compete against the John Deere 244H, the JCB 409B, the TCM 820, and the Cat 908, it included an 80hp Cummins or Deere engine, and a Rexroth hydrostatic drive system coupled to Sige planetary axles. A fully isolated cab with creature comforts superior to its competition was an integral part of the design, as was a parallel-linkage boom design with +/- 3.0-degree mechanical leveling. The top speed of 21 mph with a single-speed transmission was accomplished by refinement of an innovative dual-motor hydrostatic drive system originally done on the Waldon 7000.

Easy serviceability was a major goal in this design, and the end result is much easier to work on than any competing machine. Removal of the cab or splitting the frame is not required for any repair, including replacement of the articulation pivot bearings.

The design team on this project consisted of two engineers and a draftsman (for the latter part of the project). Production release was less than 18 months after the start of design. One prototype was built and the second machine built was a sellable production unit.

The 7500 was designed to be built at Waldon; very little of its production is farmed out, and even components like the cab were built in-house in a facility with very basic fabrication equipment.

### **Waldon 7000 Loader**

see it at: [www.mobileproductsinc.com](http://www.mobileproductsinc.com)

DPD team members: Jess Davis, Ricky Heflin (as employees of Waldon, Inc.)

This is a 1.25-yard wheel loader tractor aimed at Waldon's traditional heavy-industrial market. The design was based on the successful Waldon 6000C, with the major difference being a 12-inch longer wheelbase to make room for a much-nicer cab and an 18-mph shift-on-the-go drivetrain. The design team consisted of the engineering manager and myself and it went from concept to production in about a year. One test machine was built, and the second machine was a sellable production unit.

### **Waldon 5500 Loader**

DPD team members: Jay Bartel (as employees of Waldon, Inc.)

This is a small (3/4 yard) construction loader project that was a clean-screen design. Intended to compete against the JCB 407B, the TCM 806, and the Cat 906, it included an 80hp Cummins or Deere engine, and a Bondioli hydrostatic drive system coupled to Speth planetary axles. A fully isolated cab with creature comforts superior to its competition was an integral part of the design, as was a Z-bar boom design with mechanical leveling. The company was sold and this project cancelled at the prototype stage.

### **Ditch Witch 7610**

see it at: [www.ditchwitch.com](http://www.ditchwitch.com)

DPD team members: Jess Davis (as employee of Charles Machine Works, Inc.)

This is a 75-hp trencher tractor with a mechanical drive. Designed to replace the Ditch Witch 6510 the central portion of the design was a fully enclosed drivetrain with a gearbox in lieu of the 6510's open chains and shift mechanisms. I was responsible for the design of most of the machine except for the gears, shafts, and bearings inside the gearbox.

This was one of the first projects at CMW to utilize a cross-functional team for the design process, and many of the best and most innovative ideas for it came out of the team meetings that included the machinists, welders, and assemblers.

*Construction Equipment* magazine honored this machine as one of the 100 most significant products introduced in 1993.

### **Ditch Witch 5110**

see it at: [www.ditchwitch.com](http://www.ditchwitch.com)

DPD team members: Jess Davis (as employee of Charles Machine Works, Inc.)

This is a 50-hp trencher tractor with a mechanical drive. Begun as a crash project to eliminate the open chains and shift collars on the popular 4010, we utilized the casting and gearing component's 3-month prototype lead time to work through a long list of improvements including all new sheetmetal and updated axles. The success of this project inspired the 7610. Like the 7610, I was responsible for all but the internals of the gearbox.

### **Waldon WD80 Dozer**

see it at: [www.mobileproductsinc.com](http://www.mobileproductsinc.com)

DPD team members: Ricky Heflin, Jess Davis (as employees of Waldon, Inc.)

This is a small (10,000#) tracked dozer designed to fit a market niche just below the Deere 450 and the Cat D3. It also found a good market in the Forestry industry. It featured a Cummins or Deere engine, Rexroth dual hydrostat drives, single-lever track control (a year ahead of Cat!), and Berco tracks.

### **Waldon/Lay-mor 6HC Sweeper**

see it at: [www.mobileproductsinc.com](http://www.mobileproductsinc.com)

DPD team members: Ricky Heflin, Jess Davis (as employees of Waldon, Inc.)

This is a small 3-wheeled self-propelled rotary-broom sweeper sold primarily to rental yards. We designed and prototyped a single-speed combination axle/gearbox with a hydraulic motor input. The cost of the gearing killed the

cost savings we were hoping for and we shelved it in favor of individual wheel-motors. This continues to be a very strong product, and has kept the mfg ahead of some very strong competition.

**Waldon/Lay-mor LB25 Backhoe/loader**

see it at: [www.mobileproductsinc.com](http://www.mobileproductsinc.com)

DPD team members: Ricky Heflin, Ron Major, Jess Davis (as employees of Waldon, Inc.)  
This mini backhoe/loader tractor was a purchased design that came to us with almost no drawings or other documentation. The entire Engineering department worked on a crash 6-week project to reverse-engineer it based on one completed unit and a set of parts.

**Waldon/Lay-mor LB30 Backhoe/loader**

see it at: [www.mobileproductsinc.com](http://www.mobileproductsinc.com)

DPD team members: Ron Major, Ricky Heflin (as employees of Waldon, Inc.)  
This mini backhoe/loader tractor was designed to replace the LB25. It incorporated numerous updates and improvements including a diesel engine option and many things to make it easier to manufacture.

**Waldon Skyvan, Skyjacker, and Skytracker**

DPD team members: Jay Bartel, Ricky Heflin, Jess Davis (as employees of Waldon, Inc.)  
This was a line of small one-man aerial-lifts designed for mounting on a ¾-ton vans or pickups. They were successors to the earlier Waldon units, which were purchased from UEC in Oklahoma City. The Skyvan was Waldon's first machine to be designed using a CAD system.

**Ditch Witch 8020, 7520, and 5020**

see it at: [www.ditchwitch.com](http://www.ditchwitch.com)

DPD team members: Jess Davis (as employee of Charles Machine Works, Inc.)  
This was a family of hydrostatic-drive machines from 50 to 80 hp that shared as many components as possible. Jess Davis was hired as a layout drafter on this project and designed the sheetmetal and the operator's platform as well as numerous other components.

*We've done numerous other projects including parts manuals for ag implements (Baker Tillage), parts manuals for sprayers (Bowman Mfg.), weld fixtures for 1500 pound radiators (Celtic Machine), custom air filtration systems (DPD), and reverse-engineering of harvesters, module-builders, and straw blowers (various customers). We have the expertise that it takes to do your development projects!*