

Collision Shop Planning Handbook

**Your guide to laying out and equipping
a productive Collision Shop.**



**Prepared By
Collision Equipment Experts
820 Dundee Avenue
Elgin, Illinois 60120
Phone (888) 695-5801
Email: atomize@msn.com**

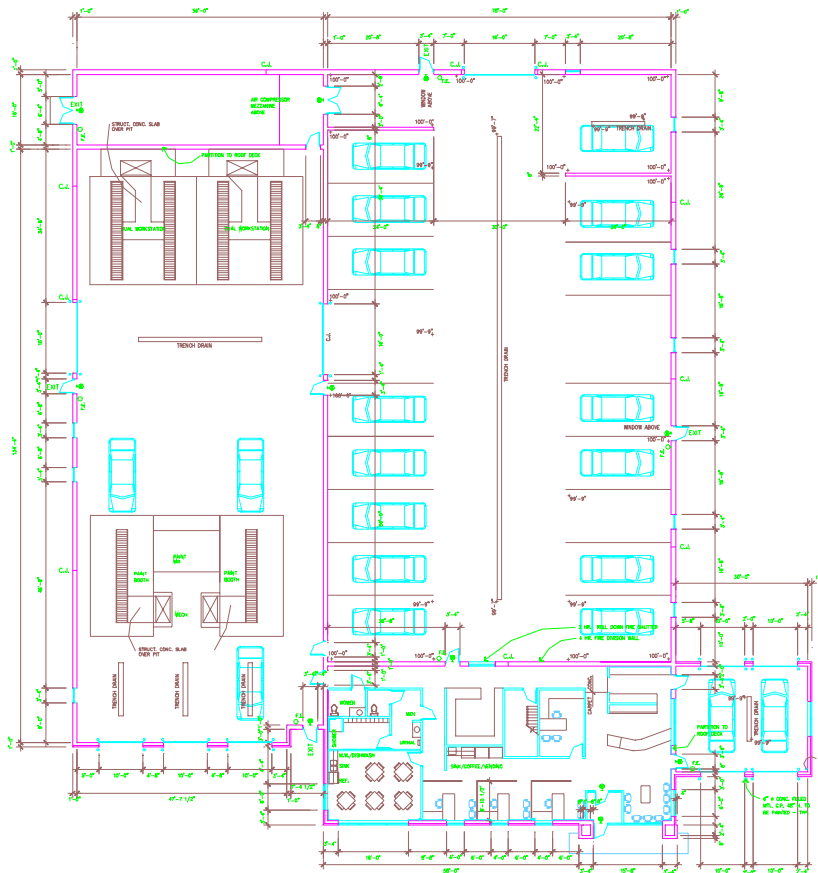
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Success Begins With Planning.

If you are planning an addition to a current facility or building a new facility, this handbook is for you. It is designed to help you plan:

- The right amount of space for your shop;
- The best way to lay it out;
- The right equipment.

This handbook will help you plan your collision shop. We can't cover every detail in one book, so if you need special help or have a question contact Collision Equipment Experts Inc. for assistance. We want to help you plan your shop right the first time, so you can realize the maximum production from your investment.



This handbook was prepared by Don Putney of Collision Equipment Experts, Inc. Don Putney has been a body technician, painter, collision shop manager, ICAR instructor and warehouse representative. Don currently is a partner in Collision Equipment Experts, Inc. and is a Certified Collision Repair Manager. Collision Equipment Experts, Inc. is an equipment distributor serving Northern Illinois Eastern Wisconsin. Collision Equipment Experts, Inc. represents the following equipment manufactures:

- **Global Finishing Solutions Spray Booth Equipment.**
Global Finishing Solutions is a leading manufacture of Spray Booths, Limited Finishing Workstations, Prep Stations and Paint Mix Rooms.
- **Becca**
Becca is a manufacture of Paint Gun Washers and Recyclers.
- **Wedgeclamp**
- **Chief Automotive**
Chief is a leading manufacture of Frame Racks, Lifts and Frame Measuring Equipment.
Wedgeclamp is a manufacture of floor pulling systems.
- **IRT Systems**
IRT is a leader in infrared curing systems.
- **Eurovac**
Eurovac is a manufacture of portable and central dust collection systems.
- **Goff Curtain Walls**
Goff Curtain Walls is a manufacture of vinyl curtain walls for contaminant control.
- **Atlas-Copco Rotary Compressors**
Atlas Copco is a leading manufacture of rotary screw compressors.
- **Devair Piston Compressors**
Devair is a manufacture of piston compressors.
- **Paint Pocket Filters**
Paint Pocket filters are over 99% efficient at collecting solid overspray and outlasts competitive filters 2 to 1.

Collision Equipment Experts, Inc. offers SITS services. SITS stands for Sales, Installation, Training and Service. To find out more about Collision Equipment Experts, Inc. and the services we offer you can call (888) 695-5801 or visit our website at www.collisionequipmentexperts.com.

Planning.

Your Key to Profits

Whether you are adding on to your existing facility or building a new facility, using a well designed layout helps you get the most out of your space. A good plan can stop production bottlenecks and other problems before they occur. A well designed plan for every department will ensure maximum productivity and profitability. Consider talking to your employees, they may know of problem areas and bottlenecks you were not aware of. Your jobber and Paint Company may be of assistance as they visit many shops and see many different ideas and concepts. Some equipment suppliers also offer layout and design services of suggested equipment layout and workflows. Visiting other Collision Shops will also allow you to see good ideas, and “good ideas” that didn’t work out.

This workbook is designed as guide to help you with ideas and guidelines for designing a productive and profitable collision shop.



The questionnaire on the following pages will help with items to consider in the design of your building.

Facility Analysis

- 1. Do I plan to:
 - Add to my current facility _____
 - Build a new facility _____
 - Change the flow/equipment in my current facility _____

- 2. What is the approximate square footage of my current facility? _____
- 3. What is the approximate square footage of the future facility? _____
- 4. What are the setback requirements of the lot? _____
- 5. What traffic facilities need to be addressed?
 - Driveways _____
 - Customer Parking _____
 - Employee Parking _____
 - Vehicle Storage _____

- 6. Have office requirements been determined? Check the ones that will be needed.

_____ Receptionist	_____ Male Employee Restroom
_____ Conference Room	_____ Female Employee Restroom
_____ Office Manager	_____ Male Customer Restroom
_____ Bookkeeper	_____ Female Customer Restroom
_____ Body Shop Manager	_____ Employee Locker Room
_____ Office Storage	_____ Employee Shower
_____ Body Shop Storage	_____ Water fountains
_____ Employee Lunch/Break Room	_____ Customer Waiting Area
_____ Production Manager Office	_____ Adjuster Office
_____ Estimate/Sales Office	_____ Parts Manager Office

Additional Comments Concerning Facility Requirements

Facility/Equipment Requirements

A. Estimate Area

- Number of bays required for estimating? _____

_____ Indoor

_____ Outdoor

_____ Covered Area

1. Number of lifts required for estimating? _____
2. Will estimate area double as a wash bay? _____
1. Will estimate area double as customer delivery? _____
2. Does estimate area need to be “drive thru”? _____

B. Service/Mechanical Area

1. Number of bays required for service/mechanical? _____
2. Number of lifts required in service area? _____
3. Will a bay be dedicated to an alignment rack? _____
4. Does a room need to be allocated for manuals etc.? _____
5. Is a separate parts room required? _____

C. Body Shop Area

1. Number of bays dedicated to frame racks/benches? _____
2. Number of bays with floor pulling capabilities? _____
3. Will a dustless sanding system be required in the body shop? _____
4. Will a dedicated aluminum repair area be required? _____
5. How many wash bays will be required? _____

Additional Comments Concerning Facility Requirements

D. Paint Shop Area

- 1. Number of bays with prep stations? _____
- 2. Size of Paint Mix Room (if desired)? _____
- 3. Will a dustless sanding system be required in the paint shop? _____
- 4. Are collision parts “cut in” off the car? _____
- 5. Are collision parts completely refinished before installing? _____
- 6. Spray Booth requirements:
 - _____ Downdraft
 - _____ Side Downdraft
 - _____ Semi-Downdraft
 - _____ Crossdraft
 - _____ Forced Dry
 - _____ Recirculating Cure
 - _____ Waterborn Paint Products
 - _____ In ground pit
 - _____ Limited Finishing Workstation
 - _____ Parts Cut-In Booth
 - _____ Drive thru
 - _____ Solid Back
 - _____ Extended Length
 - _____ Additional Lighting
 - _____ Accelerated Curing
 - _____ Water Born Paint Curing
 - _____ Air Conditioning
 - _____ Raised Platform
 - _____ CTOF Booth
 - _____ Paint Mix Room

E. Detail Area

- 1. Number of bays required for detail/reassemble/cleanup? _____
- 2. Will a vacuum system be required for cleanup? _____

Additional Comments Concerning Facility Requirements

Facility Equipment Requirements

	Existing	To Purchase	Manufacture
Air Compressor	_____	_____	_____
Air Filtration System	_____	_____	_____
Car Tracking	_____	_____	_____
Detail Equipment	_____	_____	_____
Frame Equipment	_____	_____	_____
Furniture/Fixtures	_____	_____	_____
Heating/Air Conditioning	_____	_____	_____
Lifting Equipment	_____	_____	_____
Spray Booth/s	_____	_____	_____
Prep Station/s	_____	_____	_____
Limited Finishing Workstation	_____	_____	_____
Closed Top Open Face Spray Booth	_____	_____	_____
Parts Cut In Booth	_____	_____	_____
Paint Mix Room	_____	_____	_____
Dustless Sanding System	_____	_____	_____
Wheel Alignment/Brake Rack	_____	_____	_____
Air Conditioning/Reclaimer	_____	_____	_____
Curtain Walls	_____	_____	_____
Welders	_____	_____	_____
Mechanical Diagnostic Equipment	_____	_____	_____
Gun Washer	_____	_____	_____
Thinner Recycler	_____	_____	_____
Maintenance Equipment	_____	_____	_____
Special Tools	_____	_____	_____
Storage/Safety	_____	_____	_____
Infrared Curing System	_____	_____	_____
Aluminum Repair Equipment	_____	_____	_____
Other (specify) _____	_____	_____	_____
Other (specify) _____	_____	_____	_____
Other (specify) _____	_____	_____	_____
Other (specify) _____	_____	_____	_____

Additional Information on Equipment

Operation Analysis

Breakdown of Sales	% of Sales	Gross Profit Margin
Mechanical Labor	_____	_____
Frame Labor	_____	_____
Metal Labor	_____	_____
Paint Labor	_____	_____
Parts	_____	_____
Sublet	_____	_____
 Total Yearly Sales	 \$ _____	

Shop Rates	Dollars per Hour
Mechanical Labor	\$ _____
Frame Labor	\$ _____
Metal Labor	\$ _____
Paint Labor	\$ _____
Material Allowance	\$ _____

Labor Breakdown	Current # of Employees	Future # of Employees
Mechanical Technicians	_____	_____
Frame Technicians	_____	_____
Metal Technicians	_____	_____
Paint Technicians	_____	_____
Parts	_____	_____
Sublet	_____	_____
Materials	_____	_____

Total Number of Productive Employees? _____

What is your Average Repair Order in Dollars? \$ _____

What are you projected sales after expansion? \$ _____

Collision Equipment Experts, Inc. can use this information to help determine what size facility is required to meet your sales goals.

Labor Efficiency	140%
Number of Technicians	11
Staffing Density	2 to1
Number of Stalls	23
Production Area	12527 Square Feet

Prepared For ABC Auto Body

Collision Equipment Experts

820 Dundee Avenue
Elgin, IL. 60120

(888) 695-5801 Phone
(847) 468-9384



Don Putney CCRM

Planning

Choosing an Architect and General Contractor.

Planning an efficient collision shop calls for teamwork. When you're looking for an architect or contractor, look for the one's that already have experience in body shop design and construction. The right architect will be able to listen to you and give you the best design for your needs. Your architect should know all about the local codes and regulations that could affect you.

Remember that potential customers see the outside of your building first, so it should look just as attractive as any professional building. Discuss your total space needs with your architect. That means not only the space you need today, but the additional space required as your business grows. Planning the building for additional growth will save you money on future additions later.

You should also talk to all the equipment suppliers you're considering and have your architect talk to them also. Their representative can help you more if they are involved in the early stages of the planning process. These suppliers can help you chose the proper equipment and plan for the best use of your space.

When you chose a contactor keep a few things in mind:

1. Make sure the contractor has a good reputation. Check his references, and ask about his ability to complete a job right, and on time.
2. Make sure the contractor has a performance bond and payment bond. A performance bond guarantees the job will be completed at the agreed upon price, whether the contractor finishes it himself or not. A payment bond is your insurance that the contractor can pay his sub-contractors during construction.
3. If the contractor uses sub-contractors during construction, make sure he will coordinate them, not you.

Along with your architect it will help to get your contractor involved during the design stage. They have experience that can help you...so use it. Keep them both involved from the beginning.



Provided courtesy of Collision Equipment Experts

Planning

Shop Business Goals

Knowing your business goals will help you design the right space.

1. Number of vehicles processed per week.

This is really important for choosing pulling systems, spray booths, etc. Accelerated curing equipment such as Smart Cure from Global Finishing Solutions can finish from 10 to 14 cars per 8 hour shift, while non-heated models may produce as few a 2 to 3 per shift. Knowing what production level you wish to achieve is critical in making the right choice.

2. Type of work desired.

Cycle times are extremely important to collision shops in direct repair programs. Conversely restoration shops are not as concerned with quick turnaround. Shops repairing medium or heavy duty trucks will require different facility and equipment considerations. Again your answers will guide you and your suppliers to a properly designed facility.

3. Present and Future Employees.

The number of employees you have working will have a lot to do with your production and space requirements.

4. Work Hours Per Week.

Your work hours per week split out between frame, metal and refinish operations. To get the most out each department, you need the right equipment, arranged in the right way, in the right amount of space.

5. Your Desired Market or Image.

A high-tech image must be supported by high-tech equipment and a high-tech outside appearance. Consider what the interior and exterior of your building say to customers about you.

6. Location.

Many shop owners are realizing that shops gain more customers if they are placed in high visibility locations. Customers are becoming more convenience oriented every year. An attractive shop located on a busy road is great advertisement.



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Planning

Local, State, Federal Regulations and Permits

Getting the proper permits from the federal, state and local jurisdictions can be frustrating and time consuming. Your architect-contractor-supplier team should know who controls what in your area. Most jurisdictions require the equipment in your shop have an approval from an independent testing agency. Most jurisdictions recognize ETL, UL, FM or CSA testing agencies. Your equipment supplier should be able to help you with their approval listings.

Your architect-contractor team should be able to help with additional permits. These may include building permits, electric permits, sprinkler permits etc. It is wise to be sure all permits are in order before any construction begins.



Planning

Lighting

Natural lighting is the best and build designs use skylights and windows to bring natural light inside. Northern facing openings provide more even light throughout the day. Because natural light varies you still need artificial lighting.

You can boost lighting just by painting the walls white or some other reflective light color. You need color corrected lighting in some critical areas. The refinish department, including the paint mix room, spray booth, prep stations and limited finishing workstations. Your detail area should have color corrected lighting as well as a delivery area if you have one. Artificial lighting can cause a condition call “metamerism”. This condition may cause the paint in the area you just repaired, look as though it doesn’t match the rest of the car. Make sure you have adequate lighting in all areas of your facility.



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Major Shop Departments

The Building Exterior

An attractive building brings in customers and gives them their first impression about your operation. Even if someone is only driving by and doesn't need your services just then, chances are they will remember you and come back when their car does need work. Careful landscaping, a professional looking building exterior, a nice sign and easy parking all make a big difference in attracting customers.



Major Shop Departments

Estimating/Sales

This is usually the first, and often the only area of your shop the customer will see. Place your estimating area in a protected, climate controlled location. This area should be very well lighted and include a lift to allow a complete vehicle inspection. Floor drains should be available if possible to allow for easy clean-up and rain and snow coming off the vehicles in inclement weather. Upper and lower level lighting is highly recommended. A reel mounted trouble light will aid on internal inspections.

Here are some things to keep in mind as you design your estimate area:

1. Install a large automatic garage door to make entering and exiting easy.
2. Place an estimator's office next to the estimate area to reduce wasted time getting back and forth from the estimate area to their office.
3. Consider a drive thru estimate area by placing doors at both ends of the bay.
4. Keep the area neat and clean. Again customers may see nothing else in your shop, so they may base their opinions about your operation and the quality of your work from what they see here.
5. A larger number of customers getting estimates are female. Make sure your estimate area is attractive to female customers.
6. Female customers may bring young children with them when they come in. Consider a television and DVD/video cassette player or a play area in the waiting area for these customers.



Major Shop Departments

Body Straightening and Metal Repair

You should locate this department on the other side of the refinishing department, or at least put a partition between the two. Reducing dust and contaminants from reaching the refinish area will reduce the preparation work required to achieve “clean” paint jobs. The equipment list on page 8 will help you determine the space required in the metal shop.

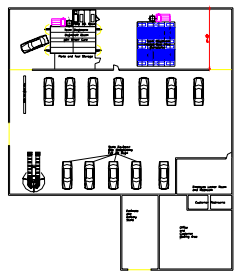
Typical metal stalls are 12 feet wide x 24 feet deep. Again this may vary on the type of work you perform. Increase the width of a stall lying along a wall to 15 feet to allow for ample room to work on both sides of the vehicle. Most pulling systems require a stall 14 feet wide x 25 feet deep. This also can vary depending on the equipment you select. Studies show that in-ground or portable lifts can have a significant increase in a technician’s productivity. Staging cars with the damaged area facing the aisle will allow the production manager easier visibility to the work in progress.

In floor pulling systems will decrease your shops cycle time as technicians don’t have to wait to use a frame rack or bench. These systems allow for correction of light damage to be completed in the technician’s stall without having to move the vehicle.

Many shops don’t consider the way work should flow through their facility. Proper flow will help increase productivity more than anything else you can do. A lineal flow (straight line) is ideal, but this also takes up the most space. A circular flow also works well in a collision facility, and reduces the amount of space required. The one thing you want to do, is to design a facility that requires the least amount of moving cars as possible.

The number of stalls a technician requires to be productive can create heated arguments. The key to running a profitable collision shop is to restore the car to pre-accident condition in the least amount of time possible. As you know you don’t get paid until the car is delivered back to your customer, in the mean time you have to pay salaries, parts, utilities, building payments etc. Most technicians will take as many stalls as you allow them too, but they can still only work on 1 car at a time. I recommend that even for your most productive technicians allow no more than 2 stalls per man. Most often I use 1.5 stalls per technician.

An aluminum repair area is a dedicated area for repair aluminum panels. This is a dedicated are with special tools to be used only on aluminum. Aluminum dust is an extreme explosion hazard and requires a water bath dust collection system. Specials welders, pre-heaters and other tools are required for this area.



Major Shop Departments

Body Prep and Prime.

New paint system and equipment technology has made sanding and priming easier and more productive. Examples include: prep stations, dust collection systems and infrared curing systems.

Most equipment manufactures have prep stations available in downdraft and semi-downdraft models. The downdraft models require a pit be built into the floor, but provide for the best curtain of air around the car. Most prep stations allow the operator to choose if the unit is recirculating the shop air or exhausting the air from the shop to the outside.

Many jurisdictions have changed the codes on equipment used for painting and priming operations. The codes require that areas where finishing operations will be performed, a Limited Finishing Workstation be used. Most Limited Finishing Workstations have prepstation plenums attached to an air replacement unit. When spray operations take place the operator must place the unit in the exhaust mode. The Limited Finishing Workstation will then bring in outside air to replace the air being exhausted out of the building the same as a heated spray booth. Most jurisdictions limit the amount of spraying that can be performed on a Limited Finishing Workstation. It is therefore very important you purchase the proper equipment for your use.

Dust collection systems can be portable or a centralized unit. A portable unit is moved to each vehicle, while a centralized unit has a collector in one area with collection drops located throughout the shop. Dust collection systems will help keep your facility clean reducing cleaning costs. Another benefit is the cars require less preparation work before going to the refinish department. Studies show a dust collection system can reduce sandpaper usage by 25% as it makes the paper run cooler reducing clogging.

Infrared curing systems reduce filler, primer and paint curing times. Using short wave lighting these systems heat the vehicle substrate, allowing the material to cure from the inside out. Infrared curing units can reduce primer cure time to 3 to 5 minutes, allowing the technician to finish the repairs quicker. Many of the new systems have adjustable time and temperature controls, and a distance sensor to reduce operator error. Infrared curing systems are available in portable, rail suspended systems and curing arches.



Provided courtesy of Collision Equipment Experts

Major Shop Departments

Painting and Curing

Many collision shop managers and owners feel the paint department is their largest bottleneck. Careful consideration should be given to the equipment purchased for your paint department. Most of the equipment, paint booths, prep stations, and limited finishing workstations are high-ticket items. Do to the installation requirements of paint shop equipment it is expensive and difficult to move. You should give careful consideration as to the right equipment and location of this equipment to maximize productivity.

Combination spray/cure booths provide a safe working environment and make it easier to productivity produce high-quality paint jobs. Painting and curing create fumes that must be collected and removed from your shop. A properly designed spray booth provides a safe amount of air movement to reduce the potential for dangerous fumes to collect. Use of high-efficiency filters removes solid paint particles from recirculated and exhausted air. Again, the equipment you choose should be approved by an independent test agency.

Here is list of items to consider when choosing a spray booth:

1. The amount of space a spray booth will take up.
2. What production levels a spray booth needs to meet.
3. Utility requirements for the spray booth.
4. The type of air flow you want-downdraft or semi downdraft, for example.

Spray booths will be discussed in detail later in the handbook.



Provided courtesy of Collision Equipment Experts

Major Shop Departments

Painting and Curing

Most shops now have paint mixing machines to custom mix the required material for each vehicle. This practice reduces cost, and provides for more accurate paint matches. To safely store and dispense these materials most shops require a paint mix room. Most manufactures provide paint mix rooms with color corrected lighting and exhaust systems. Some manufactures have engineered the required spill containment in to their design, while others require you to pour a concrete curb to provide the spill containment. Most jurisdictions have specific codes on paint mix rooms, these may include:

1. The amount of paint that can be stored in the mix room (this will vary on size and the proximity of the paint mix room door to the booth door).
2. The amount of air exhausted from the paint mix room.
3. Explosion proof electric fixtures (if located inside the paint mix room).
4. The maximum dimensions of the paint mix room.

Some high production collision shops are using special spray booths for cutting in new and repaired parts. This will free up the main spray booth for painting assembled vehicles. The use of a specialty booth can provide a large production increase for a fairly small investment. There will be more on specialty booths later in this handbook.



Inside of Paint Mix Room



Large Open Face Parts Cut-in Booth

Major Shop Departments

Cool Down/Re-assembly and Detailing

This may be the last major department in your facility, but the re-assembly and detail are very important to customer satisfaction. Your customers can't see the body straightening you perform, and they don't know how to judge your prep and priming work. But there are three things the customers can and do see: the paint job, the fit of the re-assembled parts, and the level of the detailing. The detail area should always be kept clean, have the proper amount of color-corrected lighting and have the proper utilities and equipment.



Defects are easy to spot in base/clear paint

Major Shop Departments

Office and Office Employees

Pleasant working conditions are just as important for your office staff as they are for your production employees. A properly designed office promotes efficiency and boosts morale. These are the people that talk to your customers; you want to keep them happy. At least 48 square feet of floor space should be allocated for each person working in the office. Many shops provide a dedicated office for insurance adjustors who visit their shop. Locate sales/adjustors' offices as close to the inspection/estimating area as possible. Again, don't overlook the customer waiting area, it should be comfortable, attractive and clean. Items to consider:

1. Storage for books, files, paper and other office supplies.
2. Customer restrooms.
3. Furniture/fixtures for employees.
4. Furniture for customer waiting area.



Major Shop Departments

Parts/Stock Room

Like every shop, yours will need space for storing supplies, new and used parts and the parts removed from jobs in process. To reduce cycle times and maximize productivity, repairs should not begin until all the required parts are received and checked for accuracy. This requires an inventory system to easily track what parts are on hand and what is still required for each job. One of the simplest methods of handling your parts inventory is to store all parts related to a specific job on a “parts cart” made for this task. The parts can be easily moved from the parts room to the proper vehicle. If you chose this system you’ll need floor space to store all of your carts.

A stock area is required to store sandpaper, masking paper, plastic repair materials, etc. in a secure area. Some collision shops use the space above the office to store these bulky items. If that’s what you want to do, make sure your architect designs a way to get to that area safely and easily.

A parts department/stockroom should be located near the production manager’s office to allow him easy access to see what items are on hand and the items required for a particular job. The size of this department will depend on your business. Some high production collision shops have their parts delivered once the supplier has all the parts and the vehicle is scheduled. This is an excellent way to reduce the size of the parts storage area. No matter what size your shop is, plan on an outside parts delivery door. That way parts do not need to be brought through your office or shop when they are delivered. Again, this area should be kept clean and clutter-free.



A clean, well organized parts area.
Provided courtesy of Collision Equipment Experts

Equipment Selection

Once you know the type of work you want to do, and the amount of production required, it's time to pick the equipment you'll need to do it. Before you decide on or order any major piece of equipment, sit down with the manufacture's/distributor's representative and go over your needs. It is in your best interest, as well as the suppliers' best interest to make sure you have the right equipment for the type of work, and required production you need. In most cases you can chose from several manufactures. Each manufacture may have several models with optional equipment and upgrades to choose from. Remember that choosing the right equipment early, during the planning stage aids you in several ways.

First, your architect can do a better job laying out your shop if he knows exactly what is going into it. Second, your equipment suppliers should want to work with you, your contactor, and possibly each other to coordinate delivery and installation with your building. Finally, a good portion of your equipment purchases will be for expensive, high-ticket items like spray booth or body straightening/measuring equipment.

An important consideration when choosing equipment is the company representing the manufacture. High-ticket items such as spray booths need to be installed properly to operate as designed. The service and training the company provides is also an important consideration. Equipment usually requires maintenance or could be damaged in day to day operation; you could loose a lot of money in lost production looking for a company to service your equipment. To maximize productivity, your technicians need to be trained on the safe and proper operation of your equipment. Don't be afraid to ask for references from the equipment representative before you make your final decision.



Collision Equipment Experts Inc. service technician servicing an air replacement unit.

Equipment Selection

Body Straightening and Metal Repair

To restore a collision-damaged vehicle to pre-accident condition requires a collision shop to hold the vehicle, pull it, and accurately measure to ensure the vehicle is returned to factory specifications.

Holding and pulling a vehicle can be accomplished in a variety of ways. Floor systems can be used to hold the vehicle in place, while a portable pulling device is used to pull the vehicle back to factory specifications. Benches can accomplish the same task, but usually require a much longer set up time. Racks are used to hold the vehicle in place, while attached post will do the pulling. Racks will usually consist of a drive on deck, which is surrounded by moveable hydraulic pulling posts. Many high production collision shops are using floor systems in combination with a rack or bench. The rack or bench can be used for heavy hits, while the floor system is used for light pulls.



Wedgeclamp Floor System



Rack System

Provided courtesy of Collision Equipment Experts

Items to consider:

1. Set up time required before pulling can start.
2. Ease of getting non-drivable vehicles on equipment.
3. Ease of use.
4. Pulling capabilities.
5. Training.
6. Service

Measuring vehicles can be accomplished in a variety of ways. A tram gauge and tape measure can be used and provide very accurate measurements, but this method is very unproductive. Mechanical systems also provide accurate measurements in much shorter time frame. Modern computerized systems are extremely fast and accurate and can provide before and after printouts of vehicle measuring points. It is a good idea to investigate several systems, and get your technicians involved. You want to be sure they are committed to using whatever system you purchase. Items to consider:

1. Equipment set up time.
2. Ease of use.
3. Durability.
4. Training.
5. Service.



Computerized Measuring System

Provided courtesy of Collision Equipment Experts

Equipment Selection

Prep Stations

Improved factory finishes have given new importance to prepping and priming operations. Prep stations help control and improve these operations. A properly designed prep station offers many advantages:

1. Downdraft prep stations surround the vehicle with a curtain of air, which sweeps the sanding dust off the vehicle and into the filters beneath it.
2. Many units feature modular construction, so they can be customized for your specific building and shop layout.
3. Most units recirculate filtered air, which lowers shop heating costs. Some units have inside/outside dampers for venting fumes outside during priming operations.

Buyers have a choice of pit or semi-downdraft styles. Pit models provide a better curtain of air around the entire vehicle.

Although a prep station will trap most of the dust generated by typical sanding and grinding operations, some collision shop owners also install a dust collection system to provide even better dust control.

If you are going to install several prep stations that will exhaust air to the outside, you should consider installing an air replacement unit to supply clean, heated outside air into your shop. An air replacement unit will correct the negative air condition caused from the prep stations exhausting shop air outside of your building. Proper sizing and location is very important, so talk to your equipment representative to figure out exactly what your shop will need.



Team Blowtherm Dual Ultra Prep Stations

Provided courtesy of Collision Equipment Experts

Equipment Selection

Limited Finishing Workstation/CTOF

Your local jurisdiction may not allow you to prime in a prep station. In this case you may need a Limited Finishing Workstation for priming operations. A limited finishing workstation combines an air replacement unit attached to prep plenum/s. The air replacement unit will provide clean, heated outside air while the workstation is in the “exhaust” mode. A limited finishing workstation will provide a positive pressure environment similar to a pressurized spray booth, resulting in cleaner paint work. Some manufactures offer curing options on their limited finishing workstations to improve productivity. Again, it is very important to know the codes relative to what you want to accomplish when choosing the proper equipment for your shop.



Drive Thru Limited Finishing Workstation with outside Air Replacement Unit

Provided courtesy of Collision Equipment Experts

Equipment Selection

Spray Booths

There are many different styles of spray booths, but their purpose is always the same: to create a controlled dust free, well ventilated and well lighted area for finishing operations. State-of-the-art spray booths allow the vehicle to be handled within 20 to 30 minutes after the paint is applied.

Downdraft spray booths are available in many models. Pit and raised platform models allow most any shop the opportunity to utilize the benefits of a downdraft spray booth. The down side to a raised platform booth is it typically increases the ceiling height required to install the spray booth, and the entrance ramps extend 6 to 7 feet from the product doors. Pit style downdraft booths require excavation and additional concrete work. Many spray booth manufactures offer downdraft spray booths in single skin and dual skin insulated models. A single skin model is usually at a lower price point, so it may be worth considering if you are on a tight budget.

Curing the paint in a downdraft booth is accomplished different ways, a “forced dry” system reduces the air speed in the “cure” mode to achieve a higher temperature rise. A recirculating cure system will recirculate the heated air from the cabin, back through the air replacement unit and back into the spray booth. A recirculating cure system offers several advantages over a forced dry system:

1. Reduced operating costs.
2. Quicker temperature rise.
3. Higher temperature rise in colder climates.
4. Improved air flow while curing.
5. Quicker curing of vehicles.

Some spray booth manufacture offer accelerated curing options on their downdraft spray booths. Smart Cure by Team Blowtherm can cure basecoat clearcoat paint in 8 minutes. Collision shops are able to deliver vehicles in 30 minutes after the paint operation is completed.

There are many options available from spray booth manufacture worth consideration:

1. Drive through models.
2. VOC abatement.
3. Extended length.
4. Additional lighting.
5. Water born paint curing.
6. Location of air replacement units.

Again, knowing your production goals is important when choosing the proper spray booth for your facility. A spray booth equipped with Smart Cure can produce 10 to 14 cars per 8 hour shift. A forced dry booth will produce 5 to 7 cars per 8 hour shift.



Raised Platform Spray Booth with attached Paint Mix Room



Pit Style Downdraft with attached Paint Mix Room

Provided courtesy of Collision Equipment Experts

Equipment Selection

Semi-Downdraft/ Downdraft Side Exhaust Spray Booths

These spray booths representative a compromise between the traditional, but hard to get clean paint jobs crossdraft booths and the downdraft booth. In the semi-downdraft booth, air enters through the filters in the plenum located on the roof of the spray booth. The air enters the spraying area in a downward flow over the top of the vehicle, and is exhausted through a set of filters located at the opposite end of the spray booth.

The downdraft side exhaust spray booth brings air into the booth the same as the semi-downdraft, but the air is exhausted on both sides of the spray booth.

The advantages of these two models of spray booths are reduced costs, no concrete work or raised platform is required. These booths can usually be purchased as a heated version or non-heat version. The heated version is usually available with a forced dry option. Additional options available are:

1. Drive thru.
2. Extended length.
3. Lighting upgrade.

With the curing packages on these models 5 to 7 vehicles per 8 hour shift can be produced. Non-heat models will produce 2 to 3 vehicles per 8 hour shift. Many manufactures can upgrade the non-heated versions of these spray booths at a later date if your production needs require more vehicles later. Again, knowing your production requirements will help you choose the proper equipment.



GFS Downdraft Side Exhaust

GFS Semi-Downdraft

Equipment Selection

Crossdraft Booth

Crossdraft spray booths are the oldest booths still being produced. The Crossdraft spray booth moves air horizontally from one end of the booth to the other. While these booths can give you a well lit, ventilated workplace, they don't do well when it comes to getting clean paint jobs. A Crossdraft booth will handle 2 to 3 cars per 8 hour shift.



Crossdraft Spray Booth

To increase production many shops are utilizing auxiliary spray booths for several key finishing operations. Parts priming and parts jamming operations are performed in open faced or special cut-in spray booths, leaving the main booth free for assembled vehicles. These booths are available in many sizes and designs, your equipment representative should be able to help you choose the proper one for your application.



Open Faced Cut In Booth

Provided courtesy of Collision Equipment Experts

Equipment Selection

Paint Mix Room

In house paint mixing systems offer many benefits including:

1. Waste reduction (you are able to mix only the required amount of paint).
2. Time savings (your paint is ready when you need it).
3. Versatility (you can match thousands of factory colors).

Paint mixing machines come in many different sizes. You will also need digital scale, label printers, computer, and quart and gallon agitators. Your paint supplier will help you choose the right equipment for you application.

Paint mix systems must be installed in a clean, well ventilated room. You should put you mixing machine and accessories in a pre-engineered paint mix room. A typical paint mix room is constructed of sheet-metal panels much like those used in spray booths. It should have color-corrected artificial lighting and downdraft ventilation. Paint mix rooms are generally located next to the spray booth to maximize painter productivity. Your local jurisdiction will probably have codes regulating your paint mix room size, proximity of paint mix room door to the spray booth door and ventilation requirements.

Some manufactures offer exhaust only models, while other manufactures may have both input and exhaust blowers. The input blower will pressurize the paint mix room to push air born dust away from the door when it is opened. This option will help maintain a cleaner mix room environment and cleaner vehicle paint work.



Paint Mix Room Between Two Spray Booths

Provided courtesy of Collision Equipment Experts

Equipment Selection

Heating and Air Replacement Systems

The simple fact is you should use radiant heat for your entire shop to help keep it clean. Radiant heat systems work without fans, so they don't move dirt and dust around. They also heat the things in your shop, not the air around them. Also don't forget air conditioning for the offices and customer waiting area. Some owners are also putting air conditioning in the work areas to maintain productivity when seasonal heat usually reduces productivity. A heating/air conditioning contractor can help you plan the right size and style of heating and air conditioning systems for your facility.

Non-heated spray booths and prep stations exhaust large quantities of air from your building. A single spray booth or prep station will exhaust from 10,000 to 12,000 cubic feet of air per minute while it is operating. The equipment exhaust fan creates a partial vacuum, causing dirt laden outside air to be drawn in through cracks, doors and other openings. The best way to correct this negative pressure condition is with an air replacement unit. All air replacement units need a source of outside air. Air intakes can be mounted on the roof, under the roof or in a side wall. Your building design has to plan for the weight of the air replacement unit and the location of the air replacement unit and associated ductwork. Your equipment supplier should be able to help you with choosing the proper size and location for your air replacement unit. When planning a facility, discuss air replacement units with your architect and equipment supplier.



Roof Mounted Air Replacement Unit

Provided courtesy of Collision Equipment Experts

Equipment Selection

Lifts

You need lifts in a productive collision shop for three reasons:

1. Increased production (studies show that productivity increases of 20% can be realized by using lifts).
2. Higher quality work (workers can see and repair all the problems on the vehicle).
3. Workers don't get tired (the worker is able to stand or sit on a seat, not kneeling or lying on the floor).

Lifts should be installed in body stalls and estimate areas. Some owners are also installing lifts in the paint department. There are a number of lift manufactures and models to choose from. So once again, talk to several suppliers before choosing the lifts for your facility.



Collision Damage Car on Lift

Provided courtesy of Collision Equipment Experts

Equipment Selection

Infrared Curing

Infrared curing equipment speeds production by curing body filler, primer or paint quickly. By utilizing short wave lighting, the substrate is super heated, curing the materials from the back side out. Infrared curing equipment can be used on prep stations and cut-in booths to allow the technician to sand the primer or assemble the vehicle much faster.

Infrared curing equipment is available in several styles and configurations, portable, rail mount and arches are the most common. Units are available in single head and multiple head units for larger curing areas. Again, talk to several manufactures before deciding which unit best fits your requirements.



Rail Mounted Infrared Curing System
Provided courtesy of Collision Equipment Experts

Equipment Selection

Other Equipment

Page 7 of this handbook will help you think about other equipment needs you may have. We will discuss some other equipment found to be a good investment in many collision facilities.

Dust Collection Systems

Central vacuum systems, with drops between work bays, are gaining popularity in collision shops. When hoses are available in all work bays, clean up time is reduced. Portable dust collection systems work well and typically cost less than a central system. Don't forget the technicians' air tools will need to be converted or new tools will need to be purchased.



Central Dust Collection System Collector



Central Dust Collection Work Bay Drop

Provided courtesy of Collision Equipment Experts

Equipment Selection

Other Equipment

Gun washers help control contaminants in you spray equipment. Again, there are many manufactures and each have a variety of models. Look for a unit that allows the user to select between rinsing the spray gun with used or clean solvent. Some units are hands free (the spray gun is placed in a tub and solvent is sprayed through nozzles to clean the inside and outside of the spray gun). Manual units have a brush that allows solvent to flow through it to clean the spray gun. The best units have both hands free and manual cleaning capabilities.

A lot of hazardous waste will be produced from proper gun cleaning practices. A solvent recycler will allow you to reuse the waste solvent, instead of paying to have it hauled away. The recycler cooks the used solvent and leaves clean solvent for gun washing and all that needs to be hauled off is the solid waste left over. The EPA recommends on site recycling in their best practices guidelines.



Becca Deluxe Gun Washer With Solvent Recycler

Provided courtesy of Collision Equipment Experts

Equipment Selection

Other Equipment

Mig welders and spot welders are recommended by ICAR and vehicle manufactures for structural repairs. Now may be the time to considering an upgrade if your current equipment is old or requires a lot of maintenance. Again, talk to several manufactures to find the proper equipment for your facility.

Collision shops run on compressed air. Spray guns, power hand tools, gun washers and spray booths all require air. The following are some rules you should follow when choosing compressed air equipment:

1. Buy a compressor that is bigger than you need right now. Valuable time is wasted by technicians waiting for under-sized compressors to rebuild pressure after the tank has been drained. Pay attention to the delivered CFM, collision shops do not require a lot of pressure for their equipment. Also running the air lines in a loop system will eliminate pressure and volume drops at the end of the run.
2. Buy a compressor recommended for industrial use. These units will be more durable and have longer duty cycles than there counter parts. Piston and rotary screw compressors both work well, weigh your requirements to decide which unit is best for your application.
3. Compressing air also compresses moisture in the air. This moisture condenses and causes damage to tools and paint jobs. Install a refrigerated dryer in the main air line coming out of the receiver to remove this moisture. Refrigerated dryers do not eliminate the need for filter-regulators. Every drop in your facility should be equipped with filter-regulators to insure all dirt and moisture are removed.



Rotary Screw Compressor Mounted On Receiver

Provided courtesy of Collision Equipment Experts

Shop Floor Layout

By now you have a pretty good idea of what is required for a productive collision shop. Let's review a few points, and offer some important details to remember:

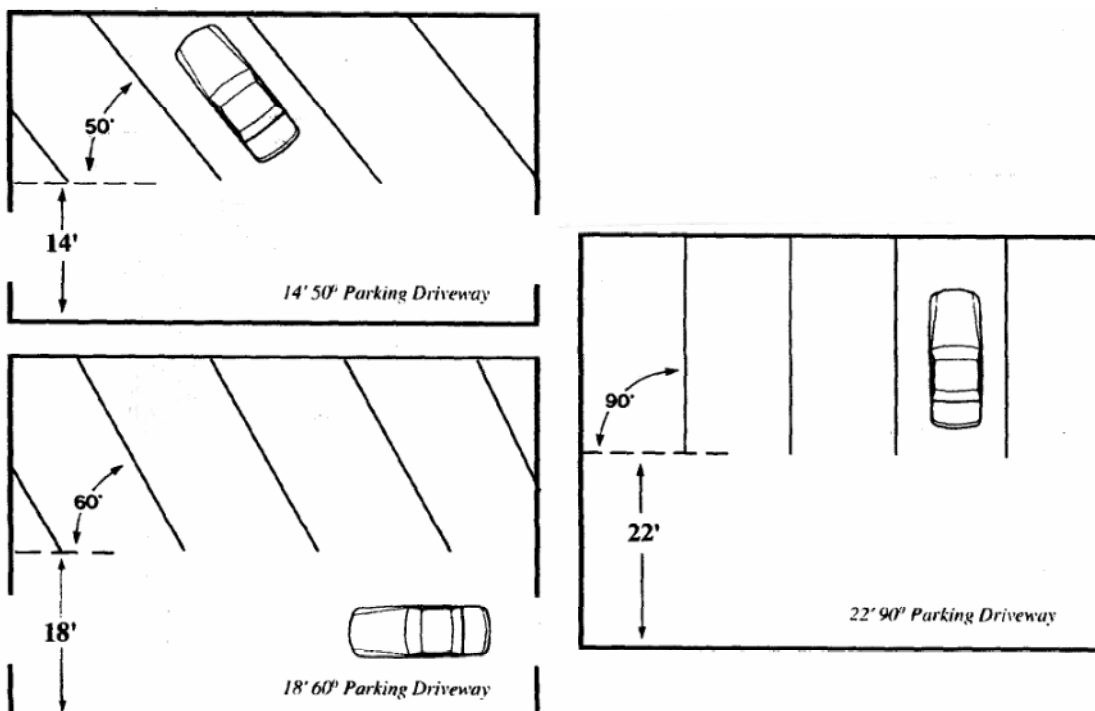
1. Eliminate as many openings and vehicle access doors as possible.
2. Make sure work "flows" through the shop in a logical manner.
3. Generally a 24' x 12' stall will handle cars, small trucks and vans. Make stalls next to walls 15' wide to allow for room to work on both sides of the vehicle.
4. Allow at least 48 square feet per person in offices.
5. Allocate floor space by percentages of work done. Typical work space breaks down: 45% metal repair, 35% paint repair, 5% parts and 15% office and employees.

Spray booth location.

Try not to locate a spray booth so that it opens directly from or exits directly to the outside of your building. The immediate threat of dust, moisture and temperature changes to a new paint job are obvious. A good design will allow for a cool down/unmask/re-assembly stall after the spray booth in a drive thru design.

Parking and Driveways

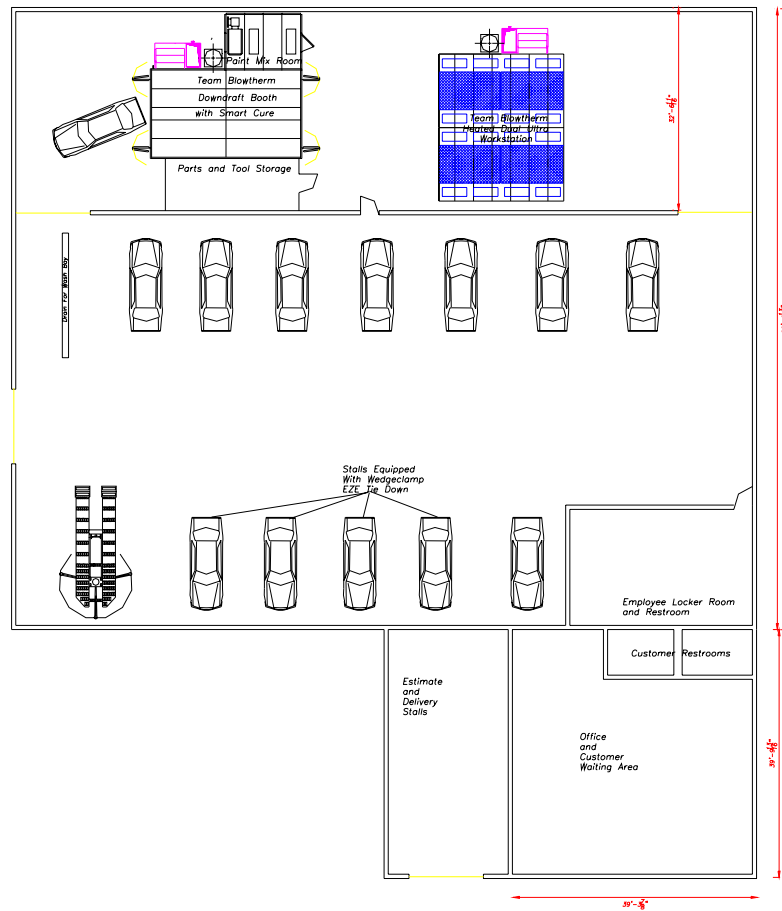
90 degree parking uses your space most efficiently, but requires the largest driveway to allow for turning space. You will need a 22 foot wide driveway for 90 degree parking. 60 degree parking will require an 18 foot wide turning area, while a 14 foot wide turning area is required for 50 degree parking. You should plan for future growth in your parking design. Many shops figure 3 to 4 parking stalls for each production stall. The local jurisdiction may have codes stating how many parking stalls are required for your facility. Your architect and contractor should be able to give you assistance with the local codes.



Shop Floor Layout

The features of a good design in a small collision facility are:

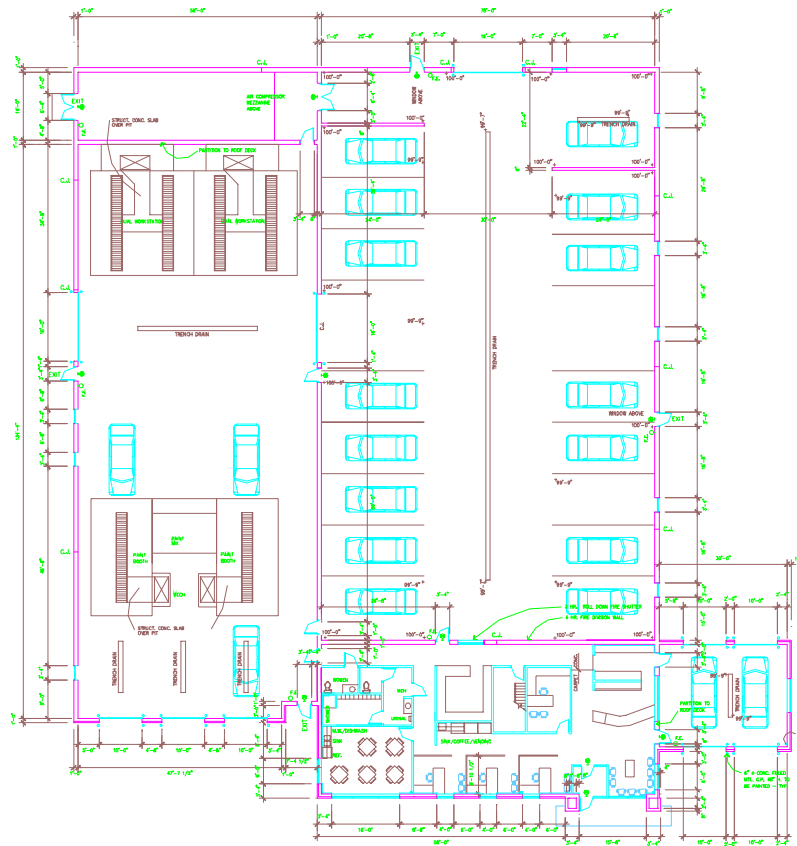
1. A wall or partition separates the spray booth from the meal working area an effective substitute for the distance that might separate it in a large shop
2. The versatility of a parts cut-in booth boosts productivity in a small space by allowing parts jamming to take place outside the main booth.
3. An estimate area, kept clean and well lit, can double as a final inspection and delivery area.
4. Parking angles and drive widths are planned to make the best use of limited space.



Shop Floor Layout

The features of a good design in a large collision shop include:

1. Metal shop is located well away from the paint shop, so dirt and dust from sanding and grinding operations can't contaminate new paint jobs.
2. Prep stations or Limited Finishing Workstations located just before the spray booth improves the prepping operations need to match factory paint finishes. They control dirt and let you do priming, so your spray booth can be kept free for assembled vehicles.
3. The paint mix room is located next to the spray booth for convenience.
4. Cool down/unmasking/re-assembly take place just outside the spray booth.
5. Detailing is right after re-assembly. This is to best show off the quality of your work.
6. Parts storage is right next to the production manager's office, so he can easily track the parts status of each job.
7. Final inspection/delivery area has easy access to a meeting room/office for final discussions on the outcome of a job.



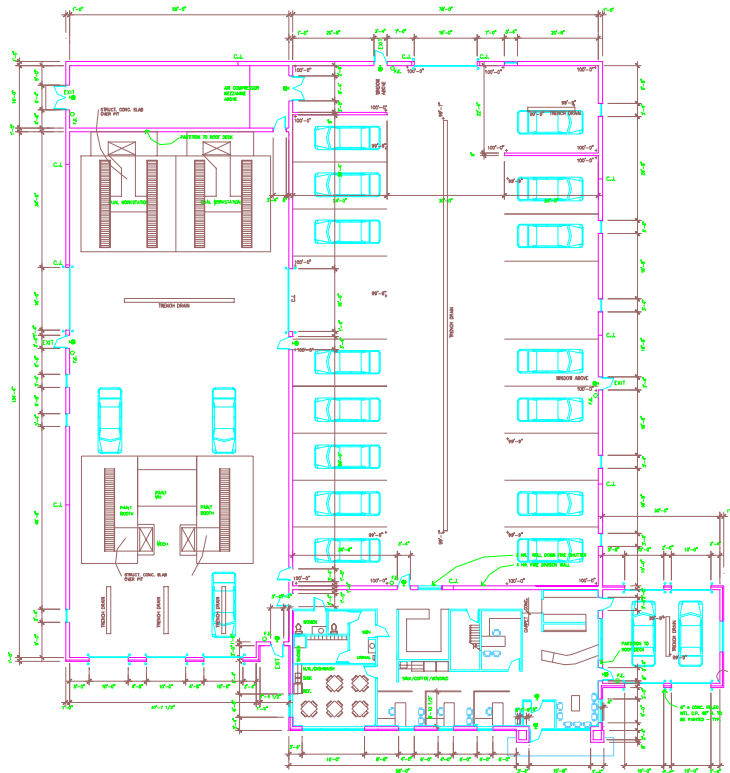
Provided courtesy of Collision Equipment Experts

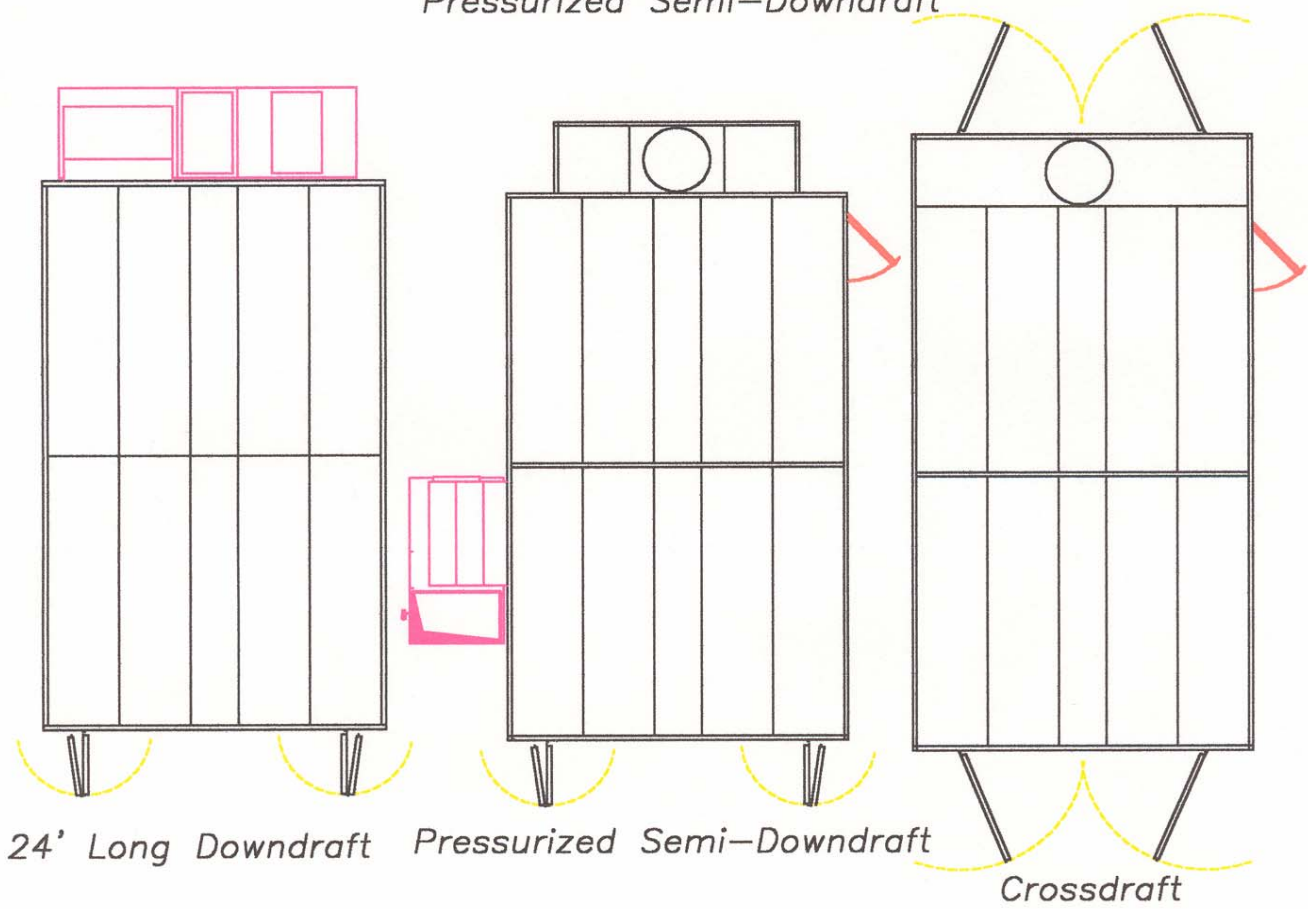
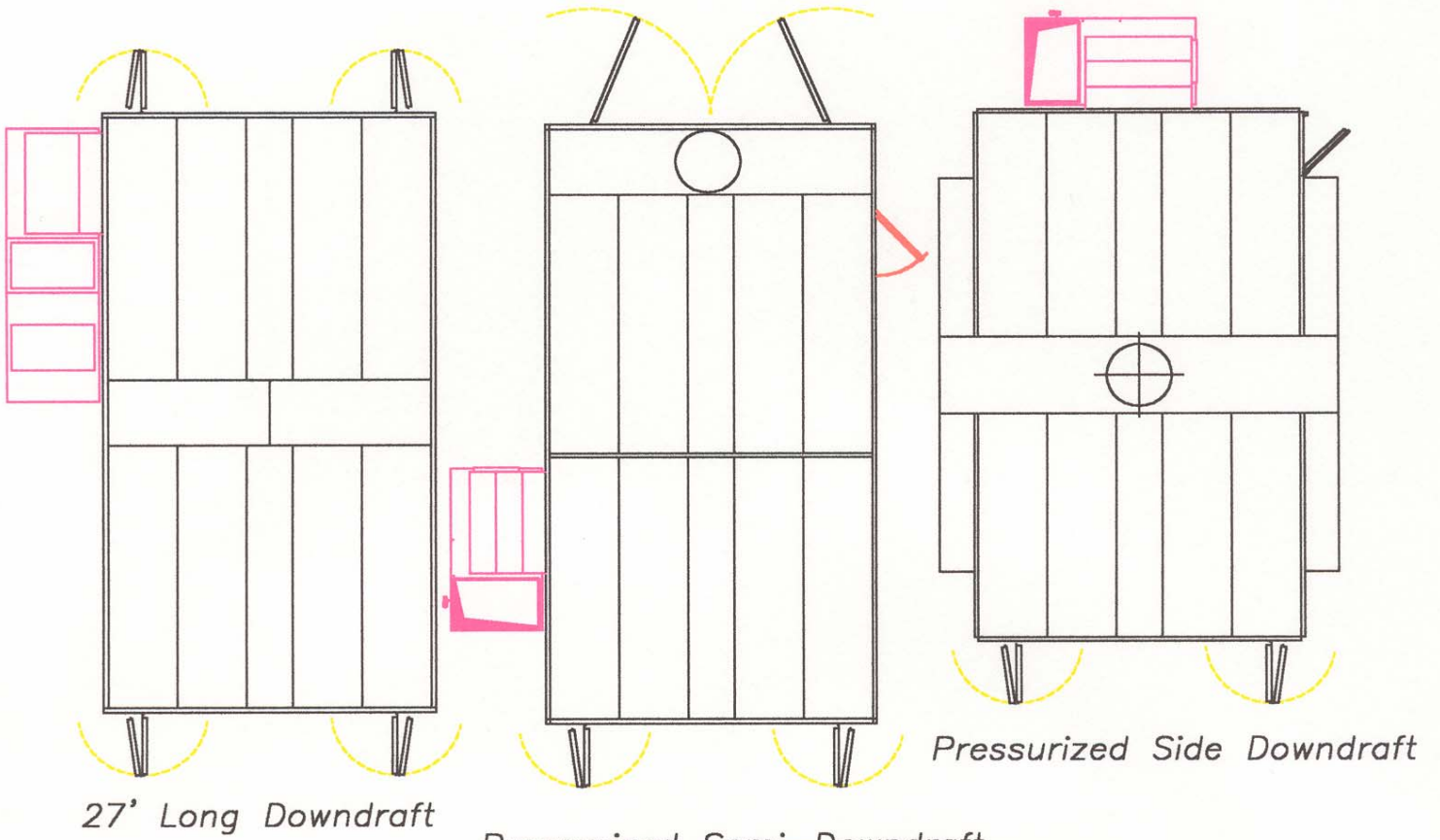
Collision Equipment Experts, Inc. is ready to help you plan your shop. We represent the most innovative and modern collision shop equipment available. Collision Equipment Experts has over 60 years experience, offering collision shop layout assistance, equipment sales, factory trained installation and service technicians to insure your satisfaction. Give us a call today so we can put our experience to work for you. We wish you every success in your new facility.

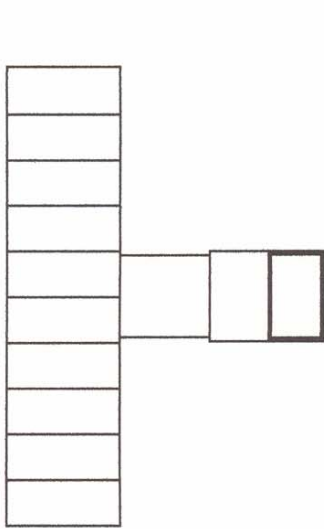


Provided courtesy of Collision Equipment Experts

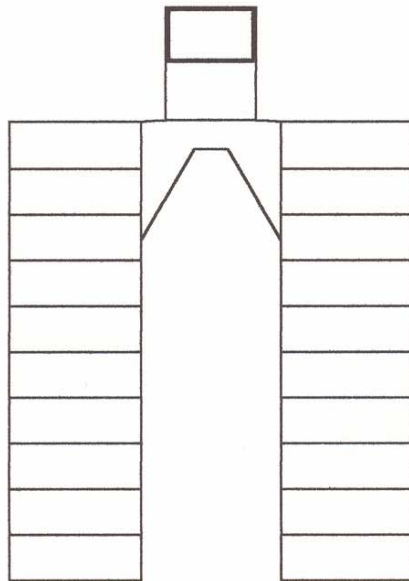
The equipment templates are 1/8" = 1', they are designed to help layout the equipment in your facility. Remember to design a system for work to flow smoothly throughout your facility. Collision Equipment Experts, Inc. can transfer you design from this template to a CAD (computer aid design) just as you see in this handbook.



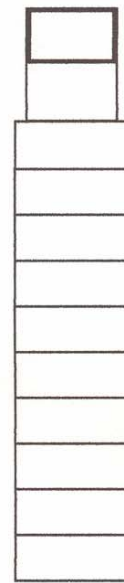




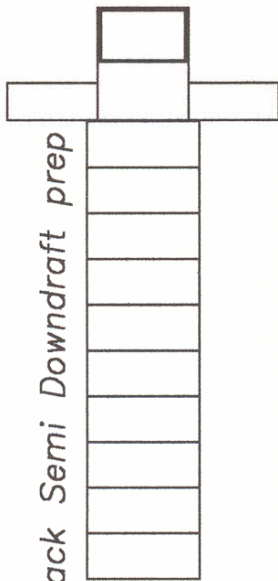
Drive Thru Standard Prep



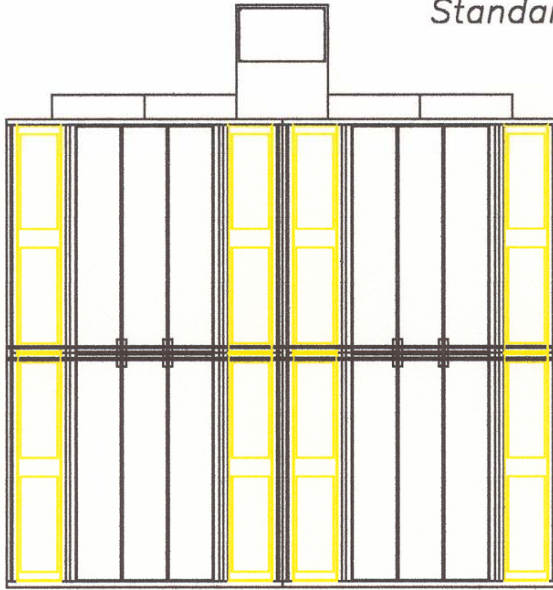
Standard Solid Back Dual Prep



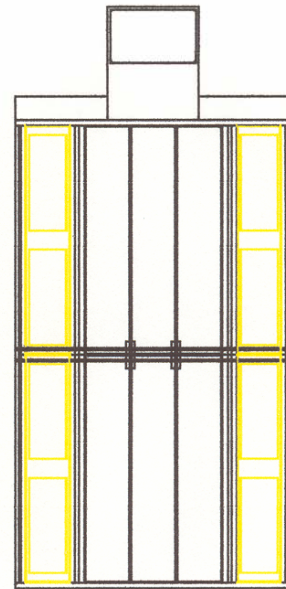
Standard Solid Back Single Prep



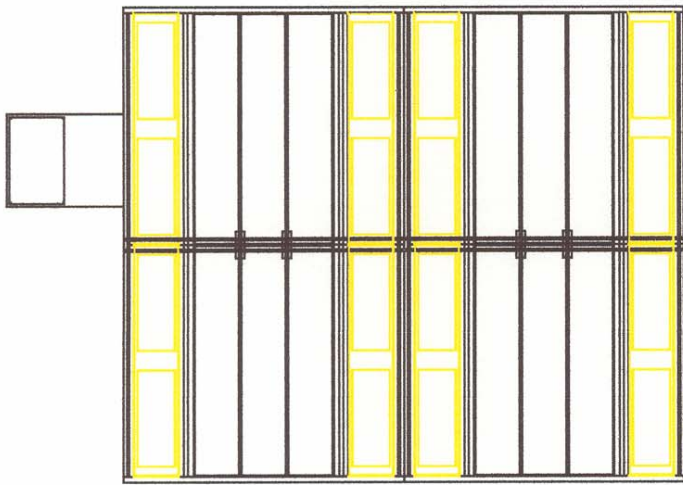
Solid Back Semi Downdraft prep



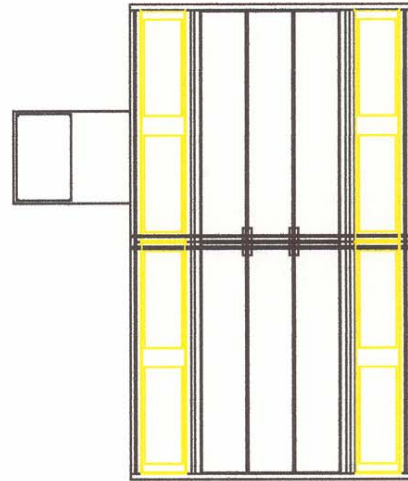
Dual Ultra Solid Back Prep



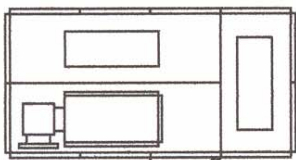
Single Ultra Solid Back Prep



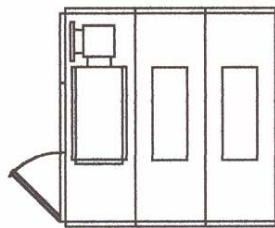
Drive Thru Dual Ultra Prep



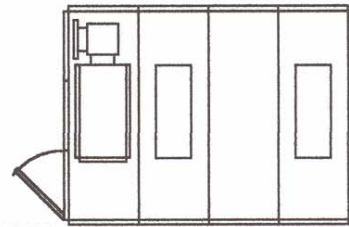
Drive Thru Single Ultra Prep



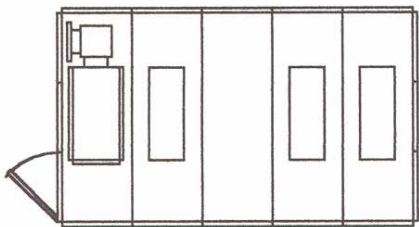
6' x 12' Paint Mix Room



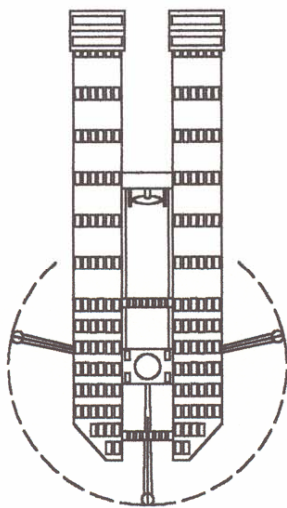
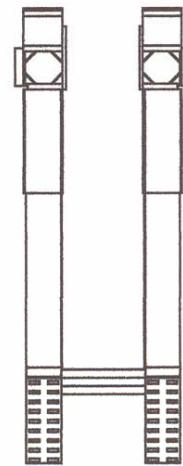
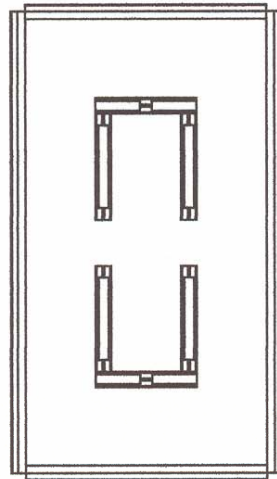
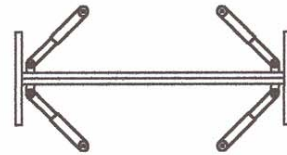
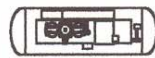
9' x 9' Paint Mix Room



9' x 12' Paint Mix Room



9' x 15' Paint Mix Room





Collision Equipment Experts

820 Dundee Road

Elgin, Illinois 60120

Phone (888) 695-5801

Fax (847) 468-9384

Email: atomize@msn.com

Website: www.collisionequipmentexperts.com