

# S&VC

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SPORTS SOUND-SYSTEM DESIGN





# Let it fly

By Andrew T. Martin

**Here are the most important things a contractor needs to consider to ensure a safe and successful sound-system rigging.**

**A** sound contractor routinely deals with numerous challenges during a typical installation. But only one area of the professional installer's marketplace is all too often the cause of unnecessary risks and cost overruns: loudspeaker rigging.

For the sound contractor, only the unavoidable risks should be taken. When considering the litigious nature of today's business and public sectors, a contractor cannot be too careful when suspending equipment over peoples' heads. Several steps can minimize the sound contractor's risk, yet still maintain a cost-effective installation.

## **Bidding the job — preparation will save you from failure**

Bidding a project often starts with the evaluation of a consulting firm's specification. Although consulting firms typically do an excellent job with electronics, loudspeakers and system configurations, the information provided on the loudspeaker rigging system is often remiss. Do not accept vague answers or noncommittal responses. Not only is it the professional responsibility of the consultant to provide specific guidelines pertaining to the rigging system and hardware type, it is also always in the consultant's best legal interests.

At a minimum, a clause should state working load limits, product traceability, structural analysis, design characteristics and a loud-

speaker-cluster model with the enclosures in free air space. Without this basic information, an educated quote cannot be generated, and therefore the rigging hardware should not be quoted. A quote based

*Get a good feeling  
for how long the  
rigging installation  
will take, and then be  
sure to add 25%.*

on non-existent information shall certainly cost the contractor the loss of integrity and a great deal of money and could result in extremely expensive rebuilds, lawsuits or criminal charges.

Above all else, you must quote only products designed for overhead suspension. Contact a credible rigging manufacturer to get a package quote. If you intend to quote a custom rigging hardware system, don't forget to include the cost of product liability insurance, product traceability, structural engineering and fabrication costs by a company with a large product liability policy willing to name your company as additionally insured for the lifetime of the product.

Before bidding the job, contact the rigging manufacturers and loudspeaker manufacturers. Often certain options will reduce the cost of the loudspeaker cluster instal-

lation, or, conversely, a specific and costly option might be required when the loudspeakers are suspended. In either case, the manufacturers can help the contractor match the best equipment to the right application.

Always call upon your experience and the experience of others in the business. Network with a similar noncompeting company in another part of the country. While you do this, remember that the legal climate of today is quite different than that of 10 years ago.

Manufacturers are another good place to look for advice on rigging experience. A contractor with limited rigging experience should not pursue large-scale rigging projects because of the complicated nature of rigging expenses and the high labor costs of specialized installers. Rigging is a specialized and dangerous profession, and certain installation requirements can drive labor costs high.

Contact a rigging labor company in the geographical area of the job site to get an idea of the labor expenses for the installation before sending off the quote. A simple 10-minute phone call can save a contractor thousands of dollars.

Another labor-cost tip: Get a good feeling for how long the rigging installation will take, then add 25% to it. Rigging is one of those areas that almost always holds surprises for the contractor and almost always takes longer than expected.

Several regulatory agencies might have jurisdiction over the project. The obvious are the local, state and federal governments. How-

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ever, many other standards may have been adopted for the project; the project consultant should be able to inform the contractor about the organizations. A partial list may include OSHA, Cal-OSHA, ANSI, WRMA, AISI, ASTM and USITT.

Another detail to factor in is the venue. Project site logistics can have a significant impact on rigging sound systems. Give careful consideration to the condition of the job site as well as preliminary installation time lines and potential subcontractor conflicts. Adding a little extra in the quote might keep the project on its allocated budget later on.

One difficult aspect of the bidding process involves the section regarding attachment to structure because it is not feasible to have the structure attachment designed, engineered and then structurally certified before securing the job. One suggestion is to have the venue owner provide the structure attachment points if it is at all possible. Another is to quote a concept but include a

disclaimer stating the attachments have not been structurally certified and may include additional expenses after the awarding of the contract. Do not assume anything with regard to structure; even the strongest looking building

*If you intend to quote a custom rigging hardware system, don't forget to include the product liability insurance, product traceability, structural engineering and fabrication costs.*

can actually be on the very edge of its load capacity.

An important factor in the bid is liability. The contractor is liable for a safe installation regardless of the specification or blueprints. Be certain the equipment being bid is rated for overhead suspension and that

the design is safe and includes a minimum 5:1 design factor. Product traceability should be stressed, and structural certification should be a part of the bid proposal. Name each one of these things in the proposal; they will be noticed by the management-level assessors who are trying to wade through that pile of unprofessional rigging quotations.

Always address change orders in the bid. The contractor should put a clause in the quote regarding the effects of changes within the scope of the work and changes or omissions in the bid package. This clause might save the contractor in the event of a system re-

design or a building structure that will not accommodate the additional load of the sound system.

Another important paragraph to include is one stating the governing laws of the contract and the intent of the contractor should any legal action be necessary. For example, let the client know you are receptive to arbitration instead of litigation should there be a dispute. Also, don't

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sign any contract or submit a binding bid unless there is a clause stating that, if any provision contained in the bid is deemed unlawful, void or for any reason unenforceable, then that provision will be deemed severable from the agreement and will not affect the validity and enforceability of the remaining provisions of the agreement.

**Preparing  
for the installation —  
careful attention  
will save money**

A safe rigging system is the result of a safe design. Do all the design work possible before physically installing the hardware. Make sure to confirm building blueprints and consultants' drawings before sending things to be built or committing to structure-attachment designs.

Order equipment and hardware as early as possible. Rigging hardware is very specialized and will require weeks and possibly months to build. Rushing the manufacturer of the rigging hardware will get the contractor nothing but added expense during the installation. Also, remember only to order the equipment used for overhead suspension that has a traceability code; no other equipment offers the contractor any sort

of liability protection.

When ordering, try to get a confirmed ship date from the manufacturer. Have the manufacturers commit to their products being within specification, and make them do it in writing. If a product received is the wrong size or a different build, the contractor can seek reimbursement for any problems arising from the nonspecification products. This applies to everything within the rigging system, from the loudspeakers and hardware to the cables.

Communication is key to a careful installation. Contact the general project manager on a regular basis. Make the project manager commit to installation windows and deadlines in writing if possible. Let the general project manager know that if other trades are not finished in time, your portion of the project will not be finished in time either. Be sure to let the general project manager know any critical information immediately, not when the project is running late.

Check in with subcontractors, manufacturers, suppliers and anyone else who could delay the installation. Find out if any delays are pending. Make sure the structure has not been modified since the design phase of the project.

Above all, make sure you write anything down that may cause a delay or change in the work.

Keep the general contractor informed of your intentions and any problems you can foresee. Make a copy of any correspondence going to the general project manager for the general contractor. Generate complete written correspondence so a paper trail will protect you should something not work out as planned.

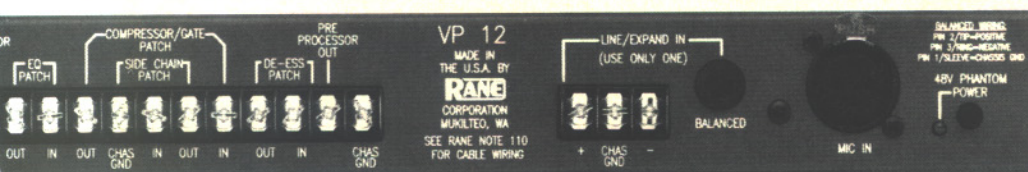
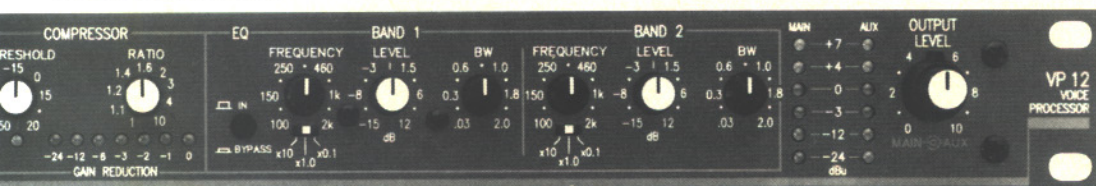
**Installation —  
the preparation done earlier  
makes this  
the easiest part**

Rigging loudspeaker systems usually involves heights and placing workers in dangerous working conditions. OSHA requires fall protection devices for all workers in a potentially dangerous environment. Full body harnesses should be used in conjunction with fall decelerators, and the lanyards must be tied off to something strong enough to handle the shock load of the individual being stopped. Workers on the floor should wear hard hats at all times, and the area immediately beneath the rigging work should be barricaded to divert anyone who should

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not be there. Also, make sure the site is quiet enough so the workers can communicate freely. Any equipment being used must be inspected on a routine basis with documented results, and routine safety meetings must be done. Above all, do not put someone uncomfortable with heights on a job that is high up; the worker will not be efficient and might have an accident. Rigging work should never be performed while the public is in the venue.

Independent contractors need to be hired under individual written

contracts; verbal contracts will not hold up in court. Independent contractors should also carry their own workers compensation insurance and liability insurance. In most states the contractor is required to carry a valid contractor's license. The same is true for subcontractors.

Once work is underway, you

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might need to make some on-site modifications. Make very clear notes on the modification, and make sure the changes are authorized in writing

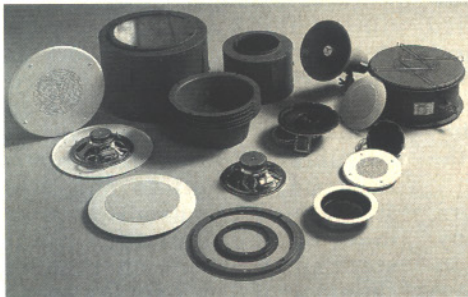
by the manufacturer of the hardware or by the project's structural engineer. These steps are critical to reducing the liability associated with the installing contractor. If the modifications were required because of misinformation or products not up to specification, the notes will help to collect reimbursement. As always, send copies of the notes to the general project manager and the general contractor, and keep the set of as-built blueprints and structural certifications current throughout the installation. At the end of the installation, make a copy and keep it in the job file. Turn the other in to the general contractor if requested.

As work progresses, make daily job and safety reports; they're an excellent way to keep the general project manager and the general contractor informed about the installation. Each day, have the installation manager complete a brief explanation of what was achieved that day. Also, put a place on the form that allows the manager to note problems, such as safety issues and job delays.

Once the project is complete, have the general project manager conduct an installation inspection. The purpose of the inspection is to confirm that the work contracted has been completed. This can be an important point if another contractor comes in later and changes something or causes an accident.

#### **Follow-up — long-term protection**

Maintain a complete job file organized in chronological order. The job file should include all pertinent information, such as correspondence, job prints, certifications, contracts and contact names. The job file is the contractor's only resource should anything go wrong in the future. The job file should be kept for the lifetime of the installation. **SMC**



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