Containment: A Sampling of Products and Contractor Practices

by Lori R. Huffman, *Associate Editor, JPCL-PMC*

Since regulatory attention became more focused on the environmental impact of lead paint removal operations in the late 1980s and early 1990s, many contractors have modified their practices and have learned much about selecting containment materials and designing containment structures. The industry consensus document, SSPC-Guide 6, "Guide for Containing Debris Generated During Paint Removal Operations," addresses many of the technical aspects of containment types to help owners and contractors determine the level of containment necessary for lead paint removal jobs.[1] The guide categorizes containment systems, based on the extent to which emissions are controlled, for various types of coating removal methods, including abrasive blasting, wet methods of surface preparation, chemical stripping, and hand- or power-tool cleaning. For example, the Guide classifies containment for abrasive blasting into four types: Class 1A, Class 2A, Class 3A, and Class 4A (in order of most to least stringent).

The advent of containment has affected contractors in other ways. Containments are used to enclose hazardous paint abatement work, other types of surface preparation, and coating application work on bridges, on water tank exteriors, on ships, in wastewater treatment plants, and on almost any other structure that can be blasted or otherwise prepared and recoated. Containing surface preparation and coating work has increased the cost of labor, materials, and equipment on projects, says Don Hovde, regional manager for Dunkin & Bush, (Bellingham, WA). It has also increased the duration of projects, owing to the time necessary for erecting and disassembling containments, he says.

Courtesy of Eagle Industries of Louisiana

"Five to ten years ago, we didn't have to worry about containment," says Allan DeLange, vice president of J.L. Manta, a Division of Kinney LLC (Hammond, IN). "Now we're getting better every year, learning what works and what doesn't."

Just as contractors have continued to refine their knowledge, manufacturers have continued to expand the technology. Based on interviews with 15 manufacturers and four contractors, this article gives a sampling of containment materials and systems available and describes what some contractors are using on their coatings removal and application jobs. Although not intended to be exhaustive or definitive, the article can serve as a starting point for contractors and facility owners seeking information about current options for containment materials and structures.

A Glimpse at What's Out There

Tarps and Screens

Many companies fabricate tarpaulins (tarps) made of woven polypropylene, woven polyethylene, and vinyl-coated nylons. Cost comparisons of containment tarps from supplier to supplier can be somewhat difficult, because many materials are custom made to the specifications of the contractor, says Dennis Trezona of Detroit Tarpaulin, Inc. (Romulus, MI). For example, the cost may increase with complex containment designs or with specific types of closures, such as hook and loop tape, says Diane Gartell of Indian Valley (Johnson City, NY).

• Proper installation of the containment material is just as important as its generic type, according to Trezona. He says that most impermeable materials can be used in an SSPC Class 1 containment as long as they are installed correctly and the containment is designed carefully.

Trezona's company offers polyethylene and polypropylene tarps at thicknesses from 2 mils (50 micrometers) to 100 mils (2.5 millimeters). Typically, reinforced polypropylene

and polyethylene tarps range in thickness from 10 to 20 mils (250 to 500 micrometers). These products can be reused during the course of a project, depending on how carefully they are maintained. Their durability depends to a great extent on the wind conditions during the project and on how well they are secured to the supporting containment structure, Trezona says. Costing approximately $0.25-$0.35/sq ft ($3-$4/sq m), polyethylene and polypropylene tarps are suitable for jobs of relatively short duration, e.g., 8 to 10 weeks. Longer projects may require a more heavy-duty material with greater durability, he says.

Courtesy of Hipp Marine Services, Hipp Plastic Wrap

Uncoated polypropylene tarps are used as permeable wind screens to contain waterjetting and other forms of water washing, Trezona says. These materials cost approximately $0.25/sq ft ($3/sq m), he says. Again, this estimate depends on the containment specification.

Vinyl-coated nylon, commonly used as truck tarping, is also used for containments subjected to windy conditions. This product also offers good resistance to abrasion, says Trezona. Its cost, approximately $0.60-$0.70/sq ft ($6-$8/sq m), depending on specification and design, is substantially greater than polyethylene and polypropylene tarps.

• Eagle Industries (New Orleans, LA) offers a range of tarps and screens, says Philip Calvo, president. The company's impervious, vinyl-reinforced polyethylene sheeting system is capable of producing a Class 1 containment. The firm also manufactures custom-made tarpaulins in polypropylene, nylon, vinyl, and other fabrics that are appropriate for Class 1 to Class 4 containments. These tarps feature seat belt webbing spaced every 5 ft (1.5 m) along the tarp, to which cables can be attached. The webbing and grommets on the interior areas of the tarps prevent them from fluttering in the wind, he says. Polypropylene wind screens are available for the containment of nuisance dust and overspray, in accordance with Class 3 and 4 guidelines.

Different generic types and weights of containment materials are suitable for different conditions, says Calvo. For example, containments subjected to high winds should be constructed of woven polypropylene or polyethylene with a burst strength in excess of 600 psi (4100 kPa). Heavy vinyls should be used on areas of the containment that are close to blasting operations because they can withstand abrasive ricochet, he says.

Calvo notes an important distinction between tarps that are flame resistant and flame retardant: flame-resistant tarps may resist catching on fire for a while, but once ignited will continue to burn, while flame-retardant tarps will stop burning when the source of the fire is removed.

The company's tarps vary in cost. Ten-mil (250-micrometer) polyethylene runs between $0.06 and $0.13/sq ft ($0.65 and $1/sq m). Depending on the fabric, custom tarps cost between $0.15 and $0.35/sq ft ($2 and $4/sq m). Polyethylene scaffold sheeting is $0.20 to $0.25/sq ft ($2 to $3/sq m), he says.

• Ninety-eight percent of the tarps that Indian Valley (Johnson City, NY) sells are custom designed, says Diane Gartell. A 100% impermeable poly-coated vinyl suitable for Class 1 containment of lead abatement projects is available from the company. The tarp ranges in weight from 19 oz to 28 oz/sq yd. The company also manufactures polypropylene tarps offering 50% to 100% containment. (Percentages refer to the size of the holes in the weave of the containment material.) Fifty to 55% polypropylene tarp is suitable for catching paint chips, and woven polypropylene screening, also manufactured by the company, is used for overspray containment. These materials range from $0.21 to $0.90/sq ft ($2 to $10/sq m), says Gartell.

• Integra Plastics (Madison, SD) offers a woven reinforced polyethylene tarp for containment. The product is also available in a fire-retardant version, says the company's Mark Downs.

• A scaffold-based impermeable tarp system is made by Monarflex Inc. (Houston, TX) and sold through distributors, says Hardy Sides. The six- and ten-mil (50- and 250-micrometer) tarps are made of a polyester scrim sandwiched between two-ply, low-density polyethylene. The tarps

continued

Courtesy of Pro-Tect

resist ultraviolet light, can be used between -40 F and 140 F (-40 C and 60 C), and transmit ambient light, according to the manufacturer. The six-mil (150-micrometer) tarp is suitable for indoor applications including lead abatement, and for outdoor applications where wind loads are not a factor. The ten-mil (250-micrometer) tarp can be used outdoors in moderate to heavy wind loads. Fire-retardant tarps are also available, says Sides. The products feature a patented grommet system that is heat-welded to the material during manufacture. The company also manufactures accessories that join individual sheets and fix the tarps to the scaffold framework.

• A woven polypropylene tarp from Reef Industries (Houston, TX) is sold either coated or uncoated. It offers between 70% and 100% containment, light weight, and flexibility, says Jeff Garza, sales representative. The custom made tarps feature either brass grommets or pipe loops for securing the tarps to a containment structure. The tarps are suitable for bridge, overpass, and tank projects. While not producing a Class 1 containment, the breathable tarps allow light and air flow to enter the containment, says Garza. They are also treated to resist ultraviolet light. Like the other tarping materials, the polypropylene products can be reused, he says.

Heat-Shrinkable Plastic

• Nine- and twelve-mil (225- and 300-micrometer) heat shrinkable plastic for Class 1 containments is available from Hipp Plastic Wrap (San Diego, CA). Ninety percent of Hipp Plastic's sales include the installation of the heat-shrinkable plastic by the company, says Randall Hipp, president. In fact, says Hipp, contractors are encouraged to allow his company to either install the containment material or to provide training on the proper use of the product.

According to the company, the shrink-wrap polyethylene is made with virgin raw materials and meets certification NFPA 701 for fire retardancy. The product is light weight and is easily repaired with shrink-wrap adhesive tape. It also reflects heat and transmits light. It is installed using open flame torches, which apply heat to the plastic to anchor it to a frame structure and to melt the seams of plastic sheets together. Once the plastic is anchored to the structure and secured with strapping and the individual sheets are joined into a whole, the plastic is heated to shrink it into a tight, monolithic containment. The heat-shrinkable plastic is not reusable, Hipp says, but it is recyclable.

• Pro-Tect Plastic and Supply, Inc. (Medford, OR), specializes in installing and distributing 9- and 12-mil (225- and 300-micrometer) flame-retardant, industrial strength heat shrink films. The company distributes all the accessories, including tape, strapping, and heat shrink guns to properly install a Class 1 or Class 2 containment, says Sharri Griffin, president. The shrink wrap system is used to contain coating application and lead and asbestos abatement projects, as well as to provide weather protection for tanks, buildings, bridges, and ships. Pro-Tect can design and install containments or weatherization projects but specializes in training contractors' personnel by furnishing technical assistance and support with material and equipment, she says.

• Eagle also markets heat-shrinkable plastic films in 9- and 12-mil (225- and 300-micrometer) thicknesses. The company offers installation services and will also provide training to contractors.

Pre-engineered Containments

• Pre-engineered containments are custom-designed for a project, using components that fit the profile of, for example, a specific bridge's stringers, beams, and flanges, says Greg Beeche, sales and market development director of Beeche Systems Corp. (Scotia, NY). Suitable for achieving SSPC Class 1 containment, these access and containment structures are moved along the length of a bridge, allowing a tighter fit and faster installation and removal than some other types of containments, he says. In addition, the systems' reusability reduces their costs over the course of a project, he notes. His company designs engineered containments for abrasive blasting and coatings application projects. The company fabricates custom-designed framing systems and designs 13-ounce/sq yd translucent tarps made from polyvinyl chloride-nylon laminate. They transmit light and resist strong winds, he says. The company offers various types of containment structures, including wood and hard containments equipped with louvers for air exchange and make-up air purposes and a bayonet-inter-

locking tube and clamp system for tarps.

The company has designed hard containments for traveling enclosures on bridges. These containments feature corrugated translucent panels on the roof and walls. They are utilized to traverse bridge spans without the need for disassembly and set-up.

Beeche says that workers must become familiar with the engineered containments to operate them successfully. Therefore, his company provides contractors with a working manual for containment assembly and disassembly and offers on-site training on the first set up, says Beeche. In addition, the containment panels are marked sequentially to correspond to the measurements of the structure to be contained.

The costs of the engineered containments, exclusive of labor, vary between $3 and $5 per sq ft ($33 and $54/sq m) of enclosure area, Beeche says.

• Bob Wildner of Ark Systems (Johnstown, PA) says that the modular platform designed by his company is suited for SSPC Class 1 containment and for jobs that require the contractor to construct a floor under structures for access, such as bridges, offshore oil platforms, ships, and power plants. The modular units measure 8.5 by 20 ft (2.6 by 6 m) and are joined together by stainless steel pins located on the sides and ends of the units. These units can be linked together from side to side or end to end to conform to any size or configuration needed, says Wildner. I-beam, parapet, rail, and weight load-calculating traversing systems are available to enable the containment to roll along bridge structures.

The modular platform offers a solid floor from which the contractor can work and is equipped with a fiberglass auger conveyor that moves spent abrasive to a vacuum hose for automatic recovery. This feature offers the advantages of reducing the stress on bridge structures from the weight of spent abrasive, eliminating the need for a clean-up crew, and allowing for continuous blasting, says Wildner.

Typical costs are $70 to $90 per sq ft ($760 to $980/sq m) of surface area, Wildner says. His company offers initial training in the assembly of the modular platform, after which the product can be easily installed by the contractor, he says.

• A mobile work station made by Bridge Vail International Inc. (Sault St. Marie, MI) is designed for bridge work, says Bill Watts, president. Constructed of steel with an aluminum platform, the station can be used to achieve SSPC Class 1 containment. It encloses a bridge section between 30 and 50 ft (9 and 15 m) long using various tarping materials secured to the bridge structure and the work station. Before moving the wheeled work station by means of winches and cables, workers roll up the tarps in a manner similar to that used on large sailboats, says Watts. A crew of 6 to 10 workers, including those persons blasting and coating the structure, can operate the work station, he says.

The equipment cost depends largely on the size of the bridge to be contained, says Watts. The initial cost of the work station is relatively high; however, on a long bridge, the cost of using the equipment is reduced because it requires fewer workers to set up and move than some other containment types, he says.

• The corrugated steel panels of Safespan's patented multiple span working platform assemble to create a solid "dance floor" that can extend under the entire work area without

continued

the need for moving and reassembly, says David Malcolm, national marketing director. The company specializes in bridge work, but the system is also suitable for work in papers mills and other areas requiring a work area below the structure to be maintained. Located in Tonawanda, NY, the company offers installation of the platform system or will train contractors to erect and dismantle the structure.

According to Malcolm, the multiple span platform system is supported by cables, which are attached to a bridge or other structure with specialty fastening brackets. Utilizing the company's patented fastening devices, steel decking panels are locked onto the cables. The panels interlock with each other, creating a solid surface, and are fastened onto the cables at each corner. In addition, the platforms are further secured to the structure by a row of vertical cables. The cables reduce sagging and increase the load-bearing capabilities of the platform, says Malcolm. Contractors can attach various types of containment materials (compatible with SSPC's Class 1 guidelines) hung from the structure to the platform using specialty fastening devices that connect to the toeboards of the platform.

The benefit of the platform system is that numerous work crews can operate on the platform simultaneously, allowing contractors to optimize their blasting, priming, and coating schedules, says Malcolm. The work platform also serves other purposes, such as providing an extra measure of fall protection to workers and acting as a protective shield for areas below the platform, he says. The multiple span working platform costs contractors between $0.24 and $0.40/sq ft ($2.60 and $4.30/sq m) to rent and from $4 to $10/sq ft ($45 to $110/sq m) for an installed, custom-designed system, Malcolm says.

• Spider (Kent, WA), a division of SafeWorks LLC, provides a turnkey approach to access and containment with its aluminum truss platform system and one-person painting and blasting containment. The platform system is constructed of modules, which come in four sizes and are pinned together. Available for sale or rental, the system features a grated deck that allows spent abrasive to fall through it and enter funnel tarps and a mechanical conveyance for collection.

The system can also be used without a platform for overspray protection and capture of abrasives. The polyethylene materials used with the system range from an 85% screen to flame-resistant tarps, which are sold in standard sizes or are custom designed, says Nancy Donahue of Spider. The tarps are secured to the

Courtesy of Safespan Platform Systems

Courtesy of Ark Systems

system with flexible attachments.

The platforms are sold individually at a cost of between $8,500 and $10,000, says Donahue. A custom-made mobile support system costs between $3,000 and $15,000, she says. The advantages of the system are fast assembly and installation (4 days), ease and speed of mobility, and a service life of 10 to 18 years for the web decks. Polyethylene tarps can be reused from project to project, says Donahue; however, reuse of screen materials and vinyls is limited to one project.

The company provides on-site training on assembing, raising, and moving the platform, says Donahue.

Spider's one-person painting and blasting containment is used in shipyards for blasting and overspray protection, says Donahue. The product shrouds the company's work baskets and provides a containment measuring 8 ft by 6 ft (2.4 m by 1.8 m).

Retractable Containments

• Retrax, Inc. (Penndel, PA), a recent entrant into the industrial maintenance paint removal market, designs and manufactures retractable containment structures to withstand high winds and heavy snow loads, says Bob Burke, president. The system is gaining use in shipyards for abrasive blasting and maintenance painting in drydocks, he says. The frames are fabricated of galvanized steel tubing and are covered by 18- to 23-ounce/sq yd polypropylene, chlorosulfonated polyethylene, or heavy-duty vinyl tarps. The tarps are secured to the frame using a locking channel, which allows individual panels to be removed and replaced, if necessary.

He says a key feature of the containment system is its accessibility: the enclosures can be opened by two people pushing on either side, thus allowing access from the sides and from the top via cranes. The enclosures can be divided into movable sections, each of which can retract to 25% to 30% of its extended length, says Burke. The enclosures move on a patented tracking system with a patented wheel and shoe assembly.

Portable Enclosure Equipment

• A proprietary enclosure system that operates in a manner similar to a mast on a sailboat is offered by Walton Technology, Inc. (Richardson, TX). The containment features a framing system of extruded aluminum with "C" tracks. Tarps are anchored to the framing by means of rope welt hems that slide into the channels. According to the company, the framing system can be erected vertically or horizontally, attached to scaffolding, supported by cable, or attached directly to the structure. Once installed, the tarps can be raised and lowered individually to provide access inside the containment, adds Bret Walton, president of the company.

The system has been used primarily for weather protection on projects in northern climates where

continued

rain, snow, and cold temperatures are a challenge. It is also suitable for lead-based paint abatement and recoating projects, says Walton. Containment tarps and screens can be fabricated from other materials, depending upon the project, he says.

The system's tarps are reusable in the course of a project, as well as from project to project, says Walton. He also says the system is easily installed, labor efficient, and requires no specific training before use.

• Eagle has recently introduced aluminum extrusions in which tarps with rope welt hems are inserted to form a containment framework, Calvo says. This containment system is particularly suited to areas subjected to high winds, he says.

Courtesy of Walton Technologies

Selecting Containment Materials

Containing blasting and coating work is not a "one size fits all" proposition, say the four contractors interviewed for this article. Different products are suitable for different levels of containment, as outlined in SSPC-Guide 6. Numerous factors come into play when selecting containment, say all of the contractors.

The first consideration in selecting containment materials is the owner's specification of desired containment classification, says Bill Newcomb, division manager for Long Painting (Seattle, WA). Additional factors in selection include the durability of the materials when subjected to wind loads and rain, ease of construction, and cost. Newcomb emphasizes, however, that the cost of the materials is not necessarily a leading concern. If, for example, the containment material is expensive but easier to erect and disassemble, its overall cost can be less expensive in the long run than a cheaper product.

According to Don Hovde of Dunkin & Bush, there are four criteria for selecting containment materials: the job scope, the protection and health of workers, the potential impact of the job on the surrounding public and environment, and the rules and regulations governing the customer's project. Hovde's company buys containment materials with the idea of reusing them on similar (nonabatement) projects. In these cases, the company buys heavier materials and has the tarps cut to a size that can be used from project to project.

The type of surface preparation to be used has an impact on containment material selection, says J. L. Manta's Allan DeLange. For example, recyclable abrasive is harder on tarps than expendable abrasive. Therefore, he says, the contractor can use the same tarps but will have to buy more of them during the course of a project. In the case of a project involving the abrasive blasting of Disney World's Catastrophe Canyon, DeLange's company instead selected a heat-shrinkable plastic to minimize the risk of dust emissions from blasting and provide a tight enclosure in a heavily trafficked area. This material was also chosen, says DeLange, because it could be made into a large containment that could enclose the entire project area. This factor saved the contractor time in a tight schedule, because the containment did not require moving from one portion of the job to the next.

In choosing containment materials, it is important to be realistic about how much material will be required. Newcomb says that his company tends to use a lot of containment material during the course of a job. On an average job lasting more than 2 months, he figures, his company will replace the entire containment at least once. Therefore, the more durable the containment materials, the better, he says.

Containment Design

Designing a containment is not particularly challenging if you have experience to draw on, says Hovde. The biggest challenge is designing the support system for the containment, he says. His company often uses scaffolding, outriggers, and cables to support containment materials; other contractors have chosen wood framing, cables, and even steel beams in addition to scaffolding.

In the Northwest, says Newcomb, contractors are often required to contain all abrasive blasting operations, regardless of whether lead abatement is involved. A factor in the design of these containments is the location of the project and its proximity to populated areas. The level of containment necessary hinges on where the project is taking place, concurs DeLange, even in the case of a lead abatement job. For example, if a blasting additive is to be used and the project is to be conducted in a rural area, tarps supported by cables may be acceptable, whereas this setup would not be suitable in a metropolitan area. Other important factors in design are access for removing material from the containment; the potential for overspray; and the weight of the abrasive material, scaffolding, and containment materials (for wind load and movability requirements), says Newcomb.

The overall cost of the contain-

ment, which includes the erection and dismantling cost, is also an important consideration, says DeLange. Building a containment that can be used over and over during the course of a project is one way to save money. For example, DeLange cites a project where his company built a self-supporting structure to enclose an elevated train track. This containment structure could be dragged along the track as surface preparation progressed. This setup can cut containment costs and project time by one half the amount required for a stick-built containment, which would need to be disassembled and reassembled for moving purposes, he says. His company has also developed a stick-built wooden framing with steel connectors at each of the connection points. The system can be assembled quickly and reused as components during a project. Optimizing time and productivity, this type of structure is suitable for pipe racks and bridges, he says.

Reusable containments are at times, no doubt, cost-effective. Glenn Baughman of Cannon Sline (Philadelphia, PA) warns, however, that contractors must be careful to construct containments from materials that can be cleaned if they plan to reuse them and transport them to other jobs, especially if they have been used on lead abatement projects.

When designing a containment, the contractor should also keep in mind practical considerations such as illumination and prevailing weather conditions, says Baughman. Light-colored (white or translucent) materials should be used to optimize natural and artificial light sources. The containment materials should be resistant to the specific weather conditions that the project will be exposed to. His company uses spray foam insulation along the containment seams, edges, and penetrations to further ensure weather resistance and containment integrity.

Courtesy of Retrax

The effects of wind cannot be underestimated. DeLange advises that when tarps are used, it is critical that they be fastened tightly to the containment framing. Wind will destroy tarps with a lot of slack, he says. When his company designs stick-built enclosures, the tarp is nailed between the solid wood framing and a smaller wood nailer, says DeLange. This method of securing the tarps holds up to wind much better than attaching the tarps to a structure by securing cords through grommets on the tarps, he says.

Contractor-Designed Containments

Contractors interviewed for this article choose more often to design containments in house than to rely on commercial pre-engineered containments.

The necessity for pre-engineered containments depends upon the complexity of the access to the structure to be maintained, Newcomb says. Large, modular platforms need to be engineered, primarily for safety reasons, he says. The private sector maintenance jobs his company has worked on have not been complex enough to necessitate the use of a third-party pre-engineered containment, he says.

Newcomb's company usually designs its own containments but has also used pre-engineered structures. For most projects it has conducted for the Washington Department of Transportation, the company has designed containment structures with the help of an engineer. All bridge containments in the state must have a set of engineer-approved drawings before they can be erected, he adds.

Hovde's company employs an engineer who helps with in-house containment design. He credits the company's experience and its cooperation with materials and staging vendors to generate ideas for containment structures. On occasion, he notes, the company designs a containment and seeks an independent engineer's review and approval.

Like Hovde, DeLange says his company rarely utilizes outside firms to design containments. Because his company is large and employs engineers and architects, containment design is completed by company personnel. Containment designs utilize commercially available containment systems and products, ordinary building products, as well as custom-fabricated elements.

What Four Contractors Are Using *Tarps*

Newcomb's company buys its containment materials from a number of suppliers. The contractor uses tarps that vary from 50% to 100% containment, depending upon the type of job, such as spray application or lead abatement.

Two types of tarp, woven polypropylene and coated woven polyethylene, are frequently used by Hovde's company. The woven polypropylene is used for overspray containment, water washing jobs, and light abrasive blasting, says Hovde. His company uses coated woven polyethylene for lead abatement.

Baughman's company usually chooses heavy-grade reinforced poly materials because of their toughness and durability. When abrasive blasting is conducted inside the containment, a rubber liner is placed against areas where abrasive may ricochet to protect against tears, he says.

"Reinforced vinyl and woven nylon tarps don't disintegrate in the

continued

wind and are tough enough to use several times," says DeLange. These products are the least expensive material that will endure multiple uses, he adds. His company also uses woven mono-filament polypropylene wind screens, especially when the containment is hung with steel cables and spans great distances. Containments made from wind screens do not meet SSPC's Class 1 containment requirements but are suitable to contain non-lead-based dust and abrasives and can handle wind loads, he says.

Heat-Shrinkable Plastic

All of the contractors had experience with heat-shrinkable plastic products. The material is well suited to containing lead abatement jobs, Newcomb says. It offers a better seal, better resistance to wind, and tighter containment than other materials. His company used heat-shrinkable plastic containment for the Fulsom Dam Bridge project, a lead abatement job where 6 to 8 abrasive blasters were working within the containment at the same time. Hovde's company uses nylon-reinforced PVC, a heat shrinkable product, to contain areas subjected to high winds, he says.

Heat-shrinkable materials should not be used for every project but rather should be used only when a contractor needs a Class 1 containment and is dealing with the potential for dust and requirements for air movement, says DeLange. Newcomb echoes this opinion, noting that the majority of WA DOT jobs call for spot blasting, which can be contained with tarps.

Pre-engineered Modular Containments

Of the contractors interviewed, only one had experience with pre-engineered modular containments. As several contractors said, they simply hadn't been presented with a project for which modular containments seemed well suited. They also pointed to the expense of modular containments as a factor in their decisions. Newcomb notes that these containments could be useful on large bridge projects where containment size and configuration do not change.

Baughman's company has found that a modular panel system for containment inside buildings worked well. However, says Baughman, sometimes the cost of modular containments is out of reach for certain jobs. Contractors must evaluate the cost-effectiveness of the containment structures they plan to use on a project-specific basis, he says.

Tips from Contractors

Newcomb advises contractors getting into containment jobs to review the project requirements, do the research on containment materials, and realize that the type of containment system used on one job may not be suitable for another. Carefully planning the containment is critical, says Newcomb, because "there is nothing worse than fighting the containment throughout the project."

Contractors need to know the regulations regarding containment before embarking on a project that requires containment structures, says Hovde. In addition, the contractor must consider safety issues associated with containment, including lighting, tripping hazards, ventilation, and employee protective equipment. Seeking advice from someone with experience in containment projects is a good start, he says. ❑

Reference

1. SSPC-Guide 6, Guide for Containing Debris Generated During Lead Paint Removal Operations, *SSPC Publication No. 97-21 (Pittsburgh, PA: SSPC, 1997).*