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COMPANY, INC.
COMPLETE MECHANICAL SERVICES
Plumbing • Heating • Air Conditioning
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Subject: ABS and CPVC in Hospitals

Dear: Thomas

The following information Lescure Company is providing is purely informational based on Lescure Company's experience and history in hospital design and construction for over 60 years in business in the State of California. We must remain neutral on this subject, as our valued customers are some of the largest hospital Owners and General Contractors in the State. We are loyal to our quality material vendors and suppliers who sell these same plastic industry products discussed in this letter. We also wish to qualify that many Lescure Company employees sit on State Code Compliance Committees and Union Trust Funds and Apprenticeship Programs.

The information provided would purely be based on our current experience and code compliant materials and systems of installation. The topic of discussion is the future use of CPVC and ABS plastic materials in Hospital construction in the plumbing and piping industry. These specific products are not currently approved in hospital piping construction specifically under OSHPD and the California Building Code. Nor have these products been introduced into the California Hanging and Seismic Codes.

Your teams request from Lescure Company was a numerical count of CPVC = or Water Systems and ABS = or Waste, Vent and Storm Drainage Fitting Joints. Base on two recently completed large hospital projects of approximately 420,000 square feet. We offer the following count:

CPVC Plastic (Water Systems) Glue Joints:

28- 10" inch diameter CPVC Glue Joints
136- 8" inch diameter CPVC Glue Joints
136- 6" inch diameter CPVC Glue Joints
880- 4" inch diameter CPVC Glue Joints
384- 3" inch diameter CPVC Glue Joints
748- 2-1/2" inch diameter CPVC Glue Joints

2,916- 2" inch diameter CPVC Glue Joints
1,412- 1-1/2" inch diameter CPVC Glue Joints
1,202- 1-1/4" inch diameter CPVC Glue Joints
2,274- 1" inch diameter CPVC Glue Joints
2,584- 3/4" inch diameter CPVC Glue Joints
9,578- 1/2" inch diameter CPVC Glue Joints

Please note, our latest information from the plastic vendors is they would be looking a CPVC for pipe sizes 1" inch diameter and Larger. And Pex Products for 3/4" inch diameter and smaller.

ABS PVC/DWV Plastic (Waste, Vent & Storm) Glue Joints:

51- 10" inch diameter ABS/DWV Glue Joints
427- 8" inch diameter ABS/DWV Glue Joints
1,688- 6" inch diameter ABS/DWV Glue Joints
10,725- 4" inch diameter ABS/DWV Glue Joints
8,913- 3" inch diameter ABS/DWV Glue Joints
19,530- 2" inch diameter ABS/DWV Glue Joints

Large PVC Assembly: Having been a plumber myself on commercial, industrial and medical facilities, having assembled large PVC pipe and fittings, is it takes at least two workers to install a 6" inch glue joint overhead. It takes two workers and additional pulling tools to assemble 8" inch glue joints overhead. It would take at least two workers and pulling equipment to assemble a 10" inch glue joint overhead. In sizes from 6" inch to 10" inch the glue dry's quickly, the workers have 15 seconds (as drying) to assemble the large glue joint correctly, if the glue joint is not assembled in this time the chances increase of a glue joint failure. The amount of glue and solvent for this type of large bore pipe installation and the exposure to the fumes is probably higher than anyone has measured to date. But the solvent and glue to assemble the above provided list would be in the hundreds of gallons. See CPC section 301.0.2 Workers Safety Measures when installing plastic pipe and solvents.

Large PVC Underground: Large PVC pressure system are made for and safest in underground situations. Because of the expansion and thrust capabilities of plastic pipe, it is best restrained in an underground situation. Most large bore PVC pipes under pressure or testing require at least 3'-0" of ground cover and thrust blocks (See NFPA section 13, 10.8, Joint Restraint 24:10.8 for plastic pipe restraining and CPC table 609.1.1 (a) for Thrust at fittings and load barring soil) at the end of the line to keep pipe restrained from jumping out of the ground and exploding. Historically there have been many injuries and deaths to workers caused by high pressure exploding PVC underground piping. There should be some national OSHA historic cases of these injuries and deaths over the last 30 years on record somewhere? I know of three plastic explosion related fatalities mostly during testing in the San Francisco Bay Area during my 30-year career in the industry.

The question related to this underground restrained pipe issue, is how would the industry restrain large bore PVC pipe in overhead Hospital and Medical Facilities, particularly while under pressure test. See California Plumbing Code (CPC) Tables 3-1, PVC-DWV Type I, Thermal Expansion and Contraction.

Testing: As the same reasons larger bore and PVC must be restrained for higher pressures, does testing of PVC pipe and fittings become a high-risk task. First and foremost PVC or any plastic pipe must not be tested with air only, as without the element of water to weight down the pipe. Air testing only has a tendency to work against the molecules of the plastic causing cracking and ultimate failure and explosion. Again this may be testified in Cal-OSHA or nation OSHA history database. Our internal Lescure Company policy is PVC and plastic pipe are only tested with water hydrostatically, and only underground and only at a maximum testing pressure of the manufacturer. See CPC Section 609.1.2 for maximum working pressure. Also See CPC section 609.2.2

CAUTION: AIR TESTING IS PROHIBITED.

Pipe Supports and Hangers: Typical above ground piping for both Water and Waste, Vent and Storm in medical facilities are installed with approved rigid materials. Rigid materials allow for a hanger span greater than non-rigid PVC materials. See per CPC Table 3-2 for horizontal and vertical hanger support spans. The cost in labor and hanger material for plastic is dramatically higher than rigid pipe.

For example: At this 420,000 square foot medical facility, Lescure Company installed 40,000 hangers and concrete hanger imbeds. Based on 2" inch rigid pipe and fittings with a hanger span of every 10'-0" and CPVC and ABS 2" inch plastic pipe and fittings with a hanger span of 4'-0" would add up to x2.5 times more hangers and imbeds. So 40,000 hangers x 2.5 = 100,000 hangers @ \$37.25 per hanger in labor and material = \$1,490,000 in additional hanger installation cost to the owner. This does not make plastic a cost effective solution it claims to be, this does not offset the cost of copper, cast iron or steel pipe prices.

Seismic Bracing: This is another issue that has not been address in the plastic industry or the California Building Code and OSHPD in medical facilities. Obviously the whole of California seismic retrofit program and deadlines are based on these OSHPD code and compliances, which has been 30 years in development. I cannot believe that the seismic problems of plastic materials in medical facilities has not been address yet, certainly not in the plastic industry nor in the CBC and OSHPD has it been resolved, reviewed and approved. The delays to approve a plastic seismic program would take longer than the deadlines of the seismic retrofits.

Fire Proofing and Fire Rating: The bulk of the piping in hospitals and medical facilities are horizontal on each floor in the ceiling, while many pipes pass from floor to floor using approved fire stopping systems, this is only a fraction of the protection. Plastic piping running horizontally in floor ceiling has limited measure of fire protection (why because its currently metal materials). The plastic horizontal CPVC or ABS has a flame

spread that would go unchecked in these ceiling spaces, a new fire wall or fire break code would need to be developed to minimize this spread rating. Similar to the additional hangers, the cost of additional fire rated walls and soffits of a hospital of 420,000 square feet would be in the millions of added construction cost to the owner, never offsetting the cost benefit between plastic and copper, cast iron and steel.

Hospital Patient and Employee safety is first and foremost, there would still require years of research to ensure proper engineering to prevent flame spread on these plastic materials in medical facilities.

In closing, working within the OSHPD code compliance permitting for many years it is hard to imagine that anyone would consider "removal of OSHPD's current restrictions on the use of CPVC potable water pipe and ABS/PVC DWV pipe in hospitals and other health care facilities". These restrictions were originally put in place for a very specific reason, many for the public safety and protection but also plastic simply cannot be engineered into any facility or commercial project of this size, without throwing out the entire codes and regulations in California.

Even though we are as neutral as we can be with our loyal plastic vendors and industry, Lescure Company as a California Plumbing and Mechanical OSHPD Design-Build Contractor, who specifies its high quality products for its warranted and insured projects, would never consider specifying or installing these plastic products in any of our hospital projects. The risk and liability is simply too high.

Sincerely



Michael Lescure
President
Lescure Company Inc.