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Water Shortage in the City of Angels

Potential building
code changes to
meet West Coast
water needs.
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Think inside the box



For years now, health care facilities have been looking into alternative methods of designing and constructing first-class facilities that provide the highest value at the lowest costs to build.

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Design and construction teams for these facilities have to develop new ideas and think unconventionally to exceed the expectations and demands of their clients, all while achieving the target budget.

As design and construction budgets are becoming smaller, the significance of getting the most return value

Modular prefabrication in a box

How?

- The isolation valve is provided for annual service and certification that the backflow prevention device is working properly.
- The box comes standard with a trap primer or optional trap seal in lieu of the trap primer. This is typically a code requirement for most all jurisdictions to eliminate the possibility of sewer gases emitting through the drain into the room's atmosphere if the p-trap were to dry up due to evaporation.
- The backflow prevention device serves to protect the building's potable water and one patient from the next from cross contamination.
- Thermostatic mixing valve allows for tempering the water temperature for optimal working temperature for the dialysis machine.
- The fold down drip tray helps to eliminate any spillage or dripping from the discharge hose of the dialysis machine onto a finished wall or cabinetry.
- The drain actually serves two purposes: (1) proper drainage from the dialysis machine into a sanitary waste system, (2) In the instance that the backflow preventer were to go into discharge mode due to a backflow condition, the BFP will dump directly into this drain.

per square foot is becoming much greater. Design teams of health care facilities need to design spaces to improve patient flow and staff efficiency. Meanwhile, the construction teams are developing alternative methods to prefabricate systems to lower costs and reduce the overall construction schedule of the project. Also, the design and construction team must always design with infection control as their top priority concern.

A relatively new product on the market has been at the forefront of thinking outside the box, by thinking "inside" this particular box. W.D. Manor Mechanical Contractors, Inc., specializing in health care design/assist, has designed, patented and is manufacturing a modular dialysis box. The W.D. Manor Dialysis Box (WDMDB) provides multiple advantages that help the owners, designers and construction teams of health care facilities meet all of these goals.

"I recently have been involved in a renovation at a health care facility. One of the requirements was to provide a dialysis box in every patient room (over 20 patient rooms). The plan was to use mobile dialysis equipment which requires a direct connection to potable water," explained Adrian Comaniciu, a plumbing designer and CPD for Dewberry in North Carolina. "As a plumbing designer, I ask myself what I can do to design a system that minimizes the potential for risk and enhances patient safety. If one general backflow was installed to serve all dialysis connections, there would be no protection of backflow from one patient to another. Alternately, the installation of traditional backflow devices at each connection would be time consuming and costly. By selecting the WDMDB I solved that problem."

"We provided backflow prevention for the dialysis equipment, as required by code, and also we protected one dialysis unit from another (one patient from another patient)," Comaniciu continued. "By using the WDMDB we eliminated over 400 feet of piping. That's a saving in material and labor."

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Backflow

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Typical installations

The WDMDB's principal component is the backflow prevention device integral to the all-inclusive product. This small 14 inches by 14 inches stainless steel box has all the required components to meet and exceed any local code.

Another common design has one dedicated backflow prevention device per supply connection. These are normally located in a designated closet or mechanical room as a bank of backflow prevention devices. This is a safer design than linking multiple dialysis stations together.

Some local jurisdictions will only require one backflow prevention device for the entire building. With this type of design multiple dialysis machine station supply connections, and more importantly those patients being treated are linked together and there is a risk of cross contamination. The facility's potable water and municipal water supply are protected, however, the individual patients

are not protected and they are at risk of reverse flow of contaminated water due to backsiphonage. Installing the WDMDB minimizes this risk. The BFP device is inches away from the supply connection.

Another common design has one dedicated backflow prevention device per supply connection. These are normally located in a designated closet or mechanical room as a bank of backflow prevention devices. This is a safer design than linking multiple dialysis stations together. The downside is that this design requires costly time and material to install dedicated distribution piping to each dialysis supply connection and often times may require an additional floor sink with a trap primer or trap guard for the RPBP discharge drain piping. Along with this design comes the use of important real estate in an already overcrowded ceiling and wall spaces. Designing the WDMDB into the project will eliminate these challenges.

Prefabricated system in a box

As the construction teams continue to look for methods to prefabricate or purchase labor saving materials and equipment, the WDMDB is a prefabricator's obvious choice.

The W.D. Manor prefabricated box allows quick and easy access to the water and drain connections for use by hospital personnel, provides the ability to annually test the

backflow preventer with minimal disruption in the patient rooms, and minimizes the concerns of water damage due to the possible failure of the backflow preventer," said Chris Voodre, plumbing designer at GMB Architecture + Engineering.

The WDMDB is a modular prefabricated complete system in a box. The stainless steel shell comes complete with an isolation valve, backflow prevention device, wet or dry trap seal option, a fold down drip tray and a water supply and drainage connections. All of these lead free components are concealed behind a brushed stainless steel or painted access door for an aesthetically appealing look. Each component of the box is equally important and serves a functional and vital role.

There is also an option offered of a third generation WDMDB that has a slightly larger shell including a hot and cold water supply and a thermostatic mixing valve for those installations that need but do not have tempered water or when the incoming water service temperature is colder or lower than the recommended low limit of your dialysis machine. With the WDMDB, most custom options can be built to suit per your particular needs upon request.

All of these components in one stainless steel cabinet while the most vital component of the box, the backflow prevention device, is protecting the water supply and the

dialysis patients from any cross contamination through reverse flow or backsiphonage.

"Dialysis boxes have always been a challenge between coordinating the requirements of the IPC and UPC and making it usable for clinical staff. From trap primers to hose insert depths, a stick built approach has not always been effective trying to get a kit of parts to meet all of the project and owner's needs," noted Nolan Rome, plumbing engineer at WSP+ccrd. "Our first experience with the prefabricated solution met all the challenges we have had in the past in a single, well thought out box that is service friendly for cleaning and aesthetic to look integral to the harmony of our patient environments." Owners and the facility staff have agreed in post occupancy evaluations that the WDMDB was the right product for the application in a patient environment."

Providing high value at low cost

The last major goal of the design team is to design spaces that increase patient throughput and the efficiency of the staff. Design team and owners are looking to offer as many services as possible per square foot to yield a higher return value. When incorporating the WDMDB, design teams are realizing they can allow for more dialysis service stations in a facility. Most patient areas would

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Backflow

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have adequate potable water and sanitary drainage system available from nearby plumbing fixtures. This allows the design and construction teams to design and install the WDMDB virtually anywhere. Often, designers are able to add dialysis stations where the facility might not typically do so.

These boxes are easily included into the design of patient rooms of all types, which allows for an additional patient service. The most common design has the WDMDB located near a patient's bedside to allow for one extra treatment or service the facility can offer in the patient's room. It's much easier to move a small rolling dialysis machine to the patient than it is move the patient to a specific dialysis station that is less private and not always readily available. This extra service adds to the return value of the square feet of the patient room and increases overall efficiency.

Other designs in semi-private areas may have a bank of dialysis stations daisy chained together. Design and installation of the WDMDB allows for the same potable water to serve multiple dialysis stations while the backflow prevention device integral to the box protects each station from cross contamination. However, the biggest winner by incorporating the WDMDB in the design is the dialysis patient; providing for their increased safety and reducing risk to the health care provider. ■