



8/4/10

# 144-AUTO FERRY

## Furniture and Fittings Cost Benefit Study

Prepared for: Washington State Ferries • Seattle, WA

Ref: 10036-001-066-1

Rev. A

August 4, 2010

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**GENERAL NOTES**

1. This report is not intended for regulatory submittal.

**REVISIONS**

REV	DESCRIPTION	DATE	APPROVED
-	Final issue	7/30/10	
A	Incorporate Owner's Comments	8/04/10	WCN WA PE 23065

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## EXECUTIVE SUMMARY

Elliott Bay Design Group (EBDG) was tasked by the Washington State Ferries (WSF) division of the Washington State Department of Transportation (WSDOT) to investigate the costs and benefits of interior furniture and furnishings alternatives for use on the new 144-AUTO FERRY Class of vessels. This investigation was mandated by a proviso in the Transportation Supplemental Budget adopted during the 2010 Washington State legislative session. No vessels of this class have been built, however detailed engineering by the prospective builder is currently proceeding, and the technical documentation describing the vessel design, construction details, and preferred equipment and materials is very mature.

The methodology of the investigation consisted of collecting data for the options selected in the pertinent vessel design technical specifications (baseline), identifying at least two alternatives to those options, and comparing the salient characteristics. The analysis was restricted to the items that are found in the vessel interior spaces used by the passengers and crew, namely deck coverings, furniture, plumbing fixtures, ceilings and surface finishes. A weighted scoring system was developed to use in ranking the alternatives, comparing not only cost information but also factors such as durability, maintainability, and safety, to name a few.

The results of the analysis indicate some clear trends among different manufacturers and product types in the furniture and plumbing fixtures sections. The baseline furniture for the passenger lounges ranked highest, and while items other than the baseline ranked higher in a few instances, the differentials are relatively small, and the benefits of using a common vendor or manufacturer for all furniture should be considered before a purchase decision is made. For the plumbing fixtures, all the equipment scored quite closely, with one or two brands ranking consistently better, albeit by small amounts.

In the deck coverings and joiner sections there are not enough common manufacturers to denote trends, however there are some products that do stand out. The rubber-flooring alternative to the vinyl composition tile is very attractive due its minimal maintenance requirements and non-slip nature, and represents the best value over the life-cycle of the product, as compared to vinyl tile. Similarly, the two ceiling system alternatives ranked higher than the baseline due to ease of maintenance and access, even though installed cost is slightly higher.

The current fleet of WSF vessels presents a comfortable and attractive décor to the public. As compared to what is found on vessels from other ferry systems, the image falls somewhere in the middle between the utilitarian look of a high-volume, no-frills people carrier and a more upscale look commonly found on cruise vessels. It is recommended that the image of the public spaces continue to represent the middle of the road.

The baseline interior furnishings are in keeping with the current décor found on most of the existing WSF vessels. The alternatives considered do not represent a significant shift in the interior look, but there are a number of alternatives that should be considered during the final material selection before construction.

## INTRODUCTION

Washington State Ferries retained Elliott Bay Design Group, LLC (EBDG), to undertake the analysis and prepare the following report. EBDG is a naval architecture and marine engineering firm in Seattle that has provided extensive engineering, design and support services for ferry system clients all over the United States. EBDG provided the contract design for the new 64 auto ferry CHETZEMOKA, and is one of the three firms that prepared the Owner's Model Design of the New 144 –Auto Ferry for WSF. Currently EBDG is involved in active ferry design and support work for the Alaska Marine Highway System, Staten Island Ferries in New York, and for the Texas Department of Transportation. To collect most of the vendor data and provide observations EBDG retained Directions in Design, an interior design firm that has experience throughout the country with ferry system interiors.

## PURPOSE

WSF/WSDOT is required to study the costs and benefits of alternate furniture and fittings for the 144-AUTO FERRY Class by the following proviso in the 2010 supplemental budget law:

"The department shall conduct a cost-benefit study on alternative furnishings and fittings for the 144-vehicle vessel class. The study must review the proposed interior furnishings and fittings for the long-term maintenance and out-of-service vessel costs and, if appropriate, propose alternative interior furnishings and fittings that will decrease long-term maintenance and out-of-service vessel costs. The study must include a projection of out-of-service time and a life-cycle cost analysis of planned out-of-service time, including the impact on fleet size. The department must submit the study to the joint transportation committee by August 1, 2010."

This report details the life-cycle analysis for the furniture and fittings specified for installation on the 144-AUTO FERRY. The analysis is performed for all items contained in the deck coverings, furniture and finishings, plumbing fixtures and accessories, and joiner work and interior decoration sections of the design-build technical specifications (Reference 1). The analysis compares each item listed in the specification (the baseline) with two competing alternatives to find the option with the lowest overall life-cycle cost, including purchase, maintenance, and out-of-service time. The baseline reflects what is generally installed on current WSF vessels. In selecting alternatives, first consideration was given to American-made products.

The projection of out-of-service time, life-cycle cost analysis of planned out-of-service time and fleet size impacts are beyond the scope of this report. The approach taken in this report is to ensure that high quality, durable, and relatively inexpensive items are chosen. To do so, a direct unit comparison of several alternatives is the best method. This comparison of alternatives is done across the full spectrum of properties applicable to an item's life-cycle performance. Beyond price and installed cost, there are no quantitative metrics that are commonly available such as a statistical assessment of an item's service life. Instead, the metrics used to assess the items and their alternatives are qualitative in nature. These qualitative metrics provide an equivalent comparison of the overall life-cycle properties of the various items.

## SCOPE OF ANALYSIS

The scope of the analysis is as follows:

1. Interior spaces in public areas, and crew lounge and living quarters, but not any operational or other work spaces.
2. Deck coverings, furniture, plumbing fixtures, ceilings, and joiner surface coverings in the spaces listed above. (Comparison of joiner systems or trade studies of insulated steel bulkheads with structural fire-rated joiner systems are beyond the scope of this effort).
3. Comparison of above items specifically called out in Reference 1 (or reasonable substitute of similar quality, if found to be discontinued) with no more than two additional examples. Examples used for comparison against the baseline specification items should show promise of reduced life-cycle costs.

## **EVALUATION**

### **Metrics Definition**

In order to create an objective method for comparing several product options, a series of metrics needed to be developed to be assessed for each item. The various metrics must address all aspects that will have an impact on the overall life-cycle of the item, from acquisition to maintenance and disposal. The following list of metrics was developed to encompass the life-cycle of the items identified within the scope of the analysis:

#### Acquisition

- Purchase Price (Quantitative Metric) – Identify purchase price on a cost per unit basis.
- Installation Cost (Quantitative Metric) – Identify installation cost on a per unit basis.

#### Maintenance

- Availability (Qualitative Metric) – Identify relative availability of item.
  - Readily available – Off the shelf item, no special order required.
  - Reasonably available – Commonly in stock, may be short amount of time required before item can be delivered.
  - Special Order Required – Item is not readily available. Significant time is required before item can be delivered.
- Durability (Qualitative Metric) – Identify relative durability of item. Life-cycle time period for WSF is expected to be 12 years.
  - High – Susceptible to minimal damage or wear.
  - Medium – Susceptible to some damage. Damage is repairable and item can be easily brought to new or near-new condition.
  - Low – Item is easily damaged or broken. Difficult to restore item to new or near-new condition.

- Maintainability (Qualitative Metric) – Identify relative ability to maintain item.
  - Easy – Requires infrequent cleaning or maintenance and little effort when required. Items can be cleaned and maintained by crew members during normal shifts.
  - Moderate – Requires either frequent maintenance or frequent cleaning. May require some special knowledge to maintain or clean. In some instances item can be repaired by crew members during normal shift.
  - Difficult – Requires frequent cleaning and maintenance. Significant effort is required to clean and maintain item. Maintenance must be done by specially trained crew members.
- Replaceability (Qualitative Metric) – Identify relative ability to replace item.
  - Good – Item can be easily removed and replaced with spare during normal work shift.
  - Fair – Item can be removed and replaced with readily available spares. Some effort and/or special equipment is required to remove and replace item.
  - Poor – Item is difficult to remove from vessel. Spares are not readily available for replacement requiring vessel to sail with broken item on board waiting for replacement.
- Safety / Environmental (Qualitative Metric) – Identify relative safety and environmentally responsible qualities of item.
  - Good – Item is made of renewable materials. Products necessary for cleaning and maintenance are non-toxic and environmentally safe.
  - Fair – Either item is not made of renewable materials and products necessary for cleaning and maintenance are non-toxic and environmentally safe or item is made of renewable materials and cleaning/maintenance products are toxic or unsafe.
  - Poor – Item not made of renewable materials. Products necessary for cleaning and maintenance are toxic and require special handling.

### Disposal

- Recyclability (Qualitative Metric) – Identify relative ability of item to be recycled after permanent removal.
  - Good – Item is easily recycled.
  - Fair – Some components of item can be recycled. Disassembly is required to separate recyclable materials from non-recyclable materials.
  - Poor – Item cannot be recycled.
- Special Requirements (Qualitative Metric) – Identify relative difficulties and special requirements associated with removal and disposal of item at end-of-life.
  - Good – No special requirements for removal of item from vessel.

- Fair – Some special requirements for removal of item from vessel.
- Poor – Highly specialized requirements for removal of item from vessel.

### **Item Metric Scores**

For each item, a score was assigned to each of the metrics corresponding to how well it met the stated goal. Scores given in each individual metric are ranked from 1 to 3, with a score of 1 being the best possible and 3 being the poorest. The score for price is given based on the total price per unit, including installation costs. The lowest priced alternative is given a score of 1, and all other items are given a score based on how much more that item cost, as a ratio of their respective costs. Thus, an item which costs twice as much as the lowest priced alternative would receive a price score of 2.

### **Weighted Composite Scoring**

To compare items, and to determine which items offer the best lifetime performance, a method for calculating a single composite score based on all of the individual metric scores needed to be developed. To do this, a weighted sum system was created, which gives an independent and consistent way to combine the relative merits of each product into a composite score that can be used to compare it with other similar products.

The weighted score for each metric is determined by dividing the metric weight by the individual metric score. Thus, an item earning a 1 for a given metric receives full points, while an item scored as a 2 will receive half points, and 3 will receive one third of the possible points. The item score is obtained by adding up all of the individual metric weighted scores. The weightings were developed such that the maximum score any item could get would be 100 points.

### **LIFE-CYCLE ANALYSIS**

The goal of the weighted scoring is to find the products which offer the greatest lifetime value with the lowest maintenance, repair, and vessel out-of-service costs. For this reason, maintenance considerations were given the highest rating, followed by cost, and lastly disposability. In this way a slightly more expensive item which may only need to be replaced once in its lifetime should receive a better score than a less expensive item which will need to be replaced several times, or which is harder to maintain. Finally, the disposal factors were designed to be relatively minimal, such that they functioned to differentiate between two products that are otherwise similar.

### **Out-of-Service Time**

Out-of-service time, and especially any unplanned out-of-service time, is not readily estimated the way purchase and installation costs can be. Instead, a comparison of out-of-service time for similar products can be inferred from the relative durability, maintainability, and replaceability of a product and its alternatives.

The durability of a product directly indicates how long it is expected to last given normal use. With higher durability comes fewer planned out-of-service times for replacement or maintenance as well as better resistance to vandalism or unintentional breakages, thus reducing unplanned out-of-service time.

The maintainability of a product has a few different effects on the out-of-service time of a vessel. First, if a product is easy to maintain, it will be possible for crew to perform all basic maintenance required during normal shifts, thus preventing any out-of-service time for normal maintenance. Second, some products have durability which is tied to proper maintenance, either through protective coatings or easily cleaned features which may prevent corrosion or mildew. Finally, a high degree of maintainability indicates a product will need maintenance less frequently.

An item that is easily replaced can prevent out-of-service time by allowing the item or any broken or damaged parts to be taken out and a new spare part installed relatively easily. Also, a high replaceability indicates the product's spares should be convenient to store aboard the vessel or other accessible location. Finally, if all of the products in a given category are larger items which cannot be simply replaced, installation should be as simple as practicable.

### Life-Cycle Performance Assessment

Because the metrics assessing the maintenance and disposal properties of each item are qualitative, they cannot be directly used to determine a quantitative life-cycle cost estimate. Instead, they provide a relative assessment of how an item will perform as compared to similar products. Because of this they can be used to determine which items will most likely offer optimal lifetime performance.

In order to find the correct proportions of the importance between the price of an item and its lifetime out-of-service time aspects, the weighting system needed to be carefully balanced. To do this, the weighting system was tailored to each specification section. This was done because each different category of furniture or fittings has different lifetime maintenance and repair aspects, as well as ratios of purchase price to potential out-of-service costs. The weightings developed for each category are as shown in the following table:

Specification Section	Acquisition	Maintenance					Disposal	
	total cost	avail.	dura.	maint.	repl.	safe	rec.	req's
SECTION 6 - DECK COVERINGS	20	10	15	20	15	10	5	5
SECTION 19 - FURNITURE AND FURNISHINGS	25	10	15	10	25	5	5	5
SECTION 20 - PLUMBING FIXTURES AND ACCESSORIES	20	10	15	20	20	5	5	5
SECTION 25 - JOINER WORK AND INTERIOR DECORATION	25	10	10	15	25	5	5	5

### Section 6 – Deck Coverings

The weightings reflect several factors about the properties of deck coverings. First, maintenance receives a significant weight because even though it will be relatively simple (vacuuming, mopping, re-applying protective coatings), these actions are important as they can significantly extend the life of the product. Also, the maintenance of flooring will take a majority of labor costs. Next, cost is high because even though these products are intended to have a moderately long life span, they will need to be replaced. Next, the durability weight is somewhat high because items in this category will receive a high amount of traffic. Additionally, the replaceability is moderately important because good replaceability will allow small damaged sections to be repaired or replaced overnight without taking the vessel out of service, while a poor replaceability means that the entire section of flooring may need to be replaced all at once.

Finally, the safety metric received a higher weight than for the other sections because of the issues of tripping or slipping hazards (see additional discussion in Appendix B).

### Section 19 – Furniture and Furnishings

First, the replaceability of the items is very important, as it can mean the difference between simply replacing a portion of an item versus having to remove the entire item. Also, price is highly weighted because it is likely that replacements will need to happen more frequently than items from other specification sections and damage to specific items is less likely to cause out-of-service time. Because of this, durability is weighted slightly lower than price and replaceability, but is still very important for reducing the number of times an item will need to be replaced over the vessel's lifetime. Finally, maintainability of the items is given a medium to low importance as there is not much required for the maintenance of most furniture, and any maintenance is expected to have less importance on the overall number of times an item will require repair or replacement.

### Section 20 – Plumbing Fixtures and Accessories

The maintenance and replaceability of plumbing parts will have more of an impact on overall life-cycle costs than their durability, because all items in this category will tend to have very similar levels of durability. Because of this, durability was weighted to be of medium importance. Finally, the price of an item is quite important, considering the replacement rate of plumbing fixtures, and was weighted accordingly. Overall, the weightings for plumbing fixtures were developed based on the fact that most items are simple and modular, and will require relatively frequent replacement or maintenance, but have little differences in the durability of each item.

### Section 25 – Joiner Work and Interior Decoration

Simple replaceability and item cost are the most important factors governing the life-cycle costs in this section. Generally, joinery items are unlikely to be damaged or have any major issues during normal usage. Therefore, the purchase price and ability to replace the items at the end of their scheduled life expectancy will have the greatest impact on the overall life-cycle cost. Because of this, durability received a low to medium weighting. Finally, the maintainability is important to ensure that keeping the items clean will not take any excessive amount of effort.

### Major Items – Unit versus Total Installed Costs

Within the collection of materials and products analyzed, overall installation costs for three major components of the public space interior furnishings were computed for each of the options. These items consisted of the safety flooring installed in the passenger lounges on the passenger deck, the seats and settees used by the passengers within these spaces, and the ceilings throughout the passenger deck. Quantities of seats and square footages of deck coverings and ceiling were taken from the data contained in Reference 2.

## CONCLUSIONS

The weighted scoring system provides a ranking for each alternative, summarized in the Unit Costs Summary table on the following pages. Detailed calculations of each item's composite score, including all metric scores, are included in a larger table in Appendix A.

The summary table shows the total scores for each item on a per unit basis. The highest scoring item indicates which will likely have the lowest overall life-cycle costs. In addition, the scores can be used to interpret whether an item offers significant benefits over the other options. If there are two items with similar scores, then the second alternative may be preferable if it will allow for simpler purchasing or better fleet integration. Also, the item scores give an indication of how much effort it will take to maintain a given item throughout its life. If all options in a given category have relatively low scores, it is likely that these will require extra attention to keep them maintained, are subject to more frequent damage, or may need more frequent replacement.

A second table; Major Item Total Installed Costs is included that compares the total installed costs of the safety floor options, the passenger seating options, and the passenger lounge ceiling options. While the proportional differences between options do not change, it is valuable to see the magnitude of the overall cost.

### Results by Specification Section

The results of the individual specification sections show some clear trends among different manufacturers and product types in the furniture and plumbing fixtures sections. In the deck coverings and joiner sections there are not enough common manufacturers to notice any trends, however there are some clearly superior products. See Appendix B for a more detailed discussion of the items and manufacturers.

#### Section 6 – Deck Coverings

Lees Carpets is the only manufacturer of deck coverings common to more than one section (both carpeting and safety walk-off matting). The Lees safety walk-off matting received the highest score and their carpeting received a favorable score, second only to Shaw Contract Group commercial carpeting. However, the relative importance of having a single source for multiple items needs to be assessed in this instance.

The two terrazzo deck coverings are similar, but the sheet decking from Altro does not provide enough durability and ease of replacement to make it worthwhile.

For safety flooring, Johnsonite rubber flooring is clearly the safest and most durable for the least maintenance, but is also the most expensive to install. The high score of this product reflects the fact that it has the lowest overall life-cycle cost, largely due to the fact that this product does not need to be waxed on a regular basis. Finally, the walk-off gratings all scored similarly because the two aluminum alternatives appear to be slightly more durable and expensive than the fiberglass Safe-T-Span product.

### Section 19 – Furniture and Furnishings

Among all of the categories of furniture and fittings, Turnbull Enterprises produces the most products. Turnbull's products often receive either the highest or relatively high scores. Beurteaux products sometimes match and in two cases out-perform the Turnbull products for passenger seating items (for lounge booths and exterior seats). However, Beurteaux does not make furniture for crew spaces such as couches or lockers. Couches and lockers from Custom Ship Interiors receive higher scores than the equivalent Turnbull products in all cases, but are competing with the ease of having a single source vendor for most furnishings on the vessel. Also, the Custom Ship Interior berths receive lower scores than those from Turnbull. Overall, the best manufacturer or combination of manufacturers needs to be selected for the vessels and for the entire WSF fleet.

In the ship's office areas, RBF Interiors are the clearly superior product in all considerations. They are equally durable, but are significantly less expensive and are more available than their HON counterparts. Also, Allseating chairs received significantly better scores than the other equivalent products. These products show promise for being the best single manufacturer for a variety of items for the ship's office furniture.

### Section 20 – Plumbing Fixtures and Accessories

Nearly all toilet, sink, and urinal products received scores within a relatively narrow range, indicating that most products offer very similar properties, with the variation coming mostly from slight price differences. Among all of the toilet, sink, and urinal manufacturers, only American Standard had a product represented in every category. Even with the low score variation, American Standard products generally score as the highest or second highest among all of the options.

Among the automatic soap dispensers, the two alternatives offer a reduced price, but are powered by a battery pack instead of an AC adaptor. Whether they can work with an AC adapter or not is unknown. Notably, the American Specialties, Inc. (ASI) soap dispenser option can be refilled directly, while the others require special cartridges. For toilet stall partitions, both the Bobrick product from the specification and the Comtec option scored highly, with the Comtec option being slightly cheaper. Bobrick also makes almost all of the restroom accessories, each of which is equal to its ASI or Bradley Corporation alternative. For hand dryers, the Excel Dryer was noticeably cheaper and more readily available than the other two items. Finally, the specified shower control valve is discontinued, and the Symmons product received the highest score between the two alternatives.

### Section 25 – Joiner Work and Interior Decoration

Of the ceiling tile systems, Gage Corporation's system are the highest ranked because of their high availability and ease of replacement. Ceiling systems were compared without consideration of any additions of insulation or other acoustic treatment; such treatment could be applied to any of the ceiling systems.

Since the specified stanchion trim item is unavailable, Option 1 became the default standard, and two other alternatives were included. A simple paint scheme applied to the steel stanchions is the highest-ranking alternative.

### **Procurement and System Integration**

Despite potential lifetime savings for a specific item or manufacturer, there may be issues integrating that product into the vessel, or even the entire fleet, depending on several factors such as: fleet-wide common spare items, volume purchasing, and design and color issues. These issues will need to be addressed when making the final selection of what products and manufacturers truly are the optimal choices.

### Commonality of Vessel Equipment

Every item assessed in this evaluation had two alternatives chosen based solely on what would be a suitable substitute for that specific item. No consideration was given to the continuity of the vessel's interior design or whether all of the products were able to be provided by a single vendor. Therefore, consideration needs to be given as to whether the individual options with the best overall life-cycle performance can effectively fit in with the overall needs of the vessel as a system.

### Common Vendors for Whole Fleet

As with the question of an individual item's ability to fit in with the vessel as a system, the items will also need to be assessed for whether they fit in with the entire WSF fleet in terms of common vendors and spares. It is possible that there will be enough of this class built to justify selecting a manufacturer or vendor unique to these vessels; however that is a decision that is outside the scope of this analysis.

## **OBSERVATIONS AND RECOMMENDATIONS**

The focus of this analysis is the interior furnishings and fittings for the 144-AUTO FERRY. These items will be the most visible to the passengers and crew, and will greatly influence the image of the public spaces on the vessel. Other factors not considered here will also influence the appearance, most notably the colors and textures of the selected surface finishes.

The current fleet of WSF vessels presents a comfortable and attractive décor to the public. By way of comparison, vessels in the Staten Island Ferry fleet present a more utilitarian image, with hard surfaces throughout, hard plastic seating, no tables or booths, and minimal amenities. On the other hand, portions of the public spaces on some of the British Columbia Ferry system vessels are highly decorated, and would not look out of place in a high-end hotel or restaurant. These approaches to system décor have evolved over time in each case, and represent working solutions to the waterborne transportation needs in each area. The Staten Island ferry system serves one, high-volume route, with crossing times of about 20 minutes, using multiple vessels, carrying upwards of 2,500 people per vessel. BC Ferries' routes are, by contrast, much longer and much more varied in their length and ports and population served. WSF routes and service represent something between these two extremes. It is recommended that the image of the public spaces continue to represent the middle of the road.

The interior furnishings identified in Reference 1 are in keeping with the current décor found on most of the existing WSF vessels, and the alternatives considered do not represent a significant shift in the interior quality and image. However, a number of alternatives identified in this analysis, as described above, should be considered during the final material selection before construction.

## **REFERENCES**

1. Technical Specification, New 144-Auto Ferry, Revision – Addenda 1-10 Conformed, Washington State Ferries, December, 2009.
2. Engineering Cost Estimate, New 144-Auto Ferry, 9000-660-100-04, Rev. -, NFDI, March 7, 2006.

**SUMMARY TABLES**

**Summary Table – Unit Costs**

**SECTION 6 - DECK COVERINGS**

		Cost (Inst.)	Score	% Diff.
6.8	<b>Poured Decking (Wet Spaces)</b>			
	Dex-O-Tex Terrazzo M (Fine), or equal DFS 06 (Warm Gray)	\$12.69	82.0	-
	Option 1: PolySpec IMO LUX	\$12.30	82.5	+0.6%
	Option 2: Altro Atlas	\$11.30	70.0	-12.0%
6.9	<b>Deck Coverings/Carpeting</b>			
	Lees Squared Carpet Squares with Super Self Lock system, Pattern "Horsepower" (sq. yard)	\$41.00	96.8	-
	Option 1: Forbo Flotex flopped textile flooring pattern "Montana" tiles (sq. yard)	\$45.03	92.0	-4.8%
	Option 2: Shaw Contract Group Commercial Carpet Tiles pattern "Evolve" tiles (sq. yard)	\$34.43	100.0	+3.2%
6.10	<b>Wainscoting (See Appendix B)</b>			
6.11	<b>Safety Flooring</b>			
	Tarkett Inc., Azrock, vinyl composition tile (VCT) or equal (sq. foot)	\$5.00	74.2	-
	Option 1: Tarkett Inc., Azrock, Premium VCT, Granite SR 12"x12" (sq. foot)	\$5.50	72.3	-1.8%
	Option 2: Tarkett, Johnsonite, Rubber Flooring 24"x24" (sq. foot)	\$10.00	86.7	+12.5%
6.16	<b>Safety Walk-Off Matting</b>			
	Bonar Floors Inc. Coral Duo (sq. yard)	\$69.95	77.9	-
	Option 1: Lees First Step Modular Tiles (sq. yard)	\$60.00	96.0	+18.1%
	Option2: Construction SpecialtiesDRTN Duration Entrance Carpet (sq. yard)	\$48.00	89.2	+11.3%
6.17	<b>Passenger Deck Safety Walk-Off Gratings</b>			
	WSF standard Safe-T-Span T-1210-ISOFR light grey (sq. foot, approx)	\$31.21	82.5	-
	Option 1: Source Floors - Peditred (sq. foot, approx)	\$45.45	88.7	+6.2%
	Option 2: Pawling Drain-Well, Maxi-Tuft - RG-250-MLW (sq. foot, approx)	\$56.67	86.0	+3.5%

**SECTION 19 - FURNITURE AND FURNISHINGS**

		Cost (Inst.)	Score	% Diff.
19.7.1	<b>Passenger Transit Seats</b>			
	Seats and backs shall be Naugahyde Marblestone, or equal and replaceable.	\$100.00	93.2	-
	Option 1: Design Tex "Friendly Faux" (meets IMO over FR foam)	\$102.75	92.5	-0.6%
	Option 2: Spradling "Intaglio Designs" (meets IMO)	\$96.00	94.2	+1.0%
	Transit seats shall be by Turnbull S-2700 Series, or equal (2-seater with table)	\$963.00	90.8	-
	Option 1: Beurteaux Ocean Club	\$1,438.50	82.6	-8.3%
	Option 2: UES, Int. TS-mS480-950HB with TS-SC450 removable seat cushion	\$1,125.00	87.2	-3.6%
19.7.2	<b>Bench Settees</b>			
	Turnbull TEI-2400WA Series: Clamshell Seating, or equal. (60" wide single)	\$840.00	78.3	-
	The space under the seating shall be utilized for life jacket stowage			
	Option 1: Beurteaux Bench Settee with life jacket storage (6 PFD's for a 60" bench)	\$1,781.00	65.1	-13.2%
	Option 2: Robicheaux Manufacturing single settee with storage below	\$3,575.00	60.9	-17.5%
19.7.3	<b>Lounge Booths/Table</b>			
19.7.6	Table Turnbull 2510 (60" long) cantilevered with 1 ped.	\$973.00	72.4	-
19.10.10	Bases and frames shall be of aluminum construction.			
	Option 1: Beurteaux	\$743.50	78.3	+5.9%
	Option 2: Robicheaux Manufacturing 60" x 30" cantilevered with 1 ped.	\$3,060.00	61.1	-11.4%
19.7.4	<b>Cafeteria Seating</b>			
	Turnbull 200 Series (200-002 & 200-004-A) or equal, dual post cantilever tables (2 person for budget) for two (2) or four (4) persons. Base and frames shall be constructed of aluminum with vinyl upholstered seat and back.	\$1,173.00	76.8	-
	Option 1: Plymold Cluster seating-Jupiter 54002S, seats6720DS, top 24023DE	\$1,100.00	80.0	+3.2%
	Option 2: Beurteaux Ocean Diner fixed pedestal seat w/ Ocean Diner fixed pedestal table	\$1,434.50	72.5	-4.3%
19.7.5	<b>Exterior Seats</b>			
	Turnbull W-2100-OB Series with WSF accent slats, or equal. (72"wide-3 seat)	\$1,369.00	71.0	-
	Option 1: Beurteaux Ocean Café 3-seat	\$833.00	80.8	+9.8%
	Option 2: UES, Int. TS-mS480-950HB	\$1,435.00	70.3	-0.7%

**SECTION 19 - FURNITURE AND FURNISHINGS**

		Cost (Inst.)	Score	% Diff.
19.8.3	<b>Counters and Vanities</b>			
	DuPont Corian 300 Series Ready-To-Install One-Piece vanity top and bowls, or equal. Dimensions: 24" d x 36" h; 4" backsplash and 2-1/2" front self edge.	\$610.00	64.1	-
	Option 1: Swanstone VTB1937 solid color with intergral sink	\$466.66	70.0	+5.9%
	Option 2: Swanstone counter and splash with Kohler K2609 undermount stainless steel sink	\$701.33	69.1	+5.0%
19.8.4	<b>Amenity Bars</b>			
	DuPont Corian counter tops, or equal.			
19.9.1	<b>Berths</b>			
	Turnbull Classic Case, CC604 Series or equal (double with base) Berth shall be fitted with a personal article shelf and (4) drawers.	\$1,557.00	80.8	-
	Option 1: Robicheaux Manufacturing 8436 closed base, double	\$5,990.00	64.0	-16.8%
	Option 2: Custom Ship Interiors	\$4,710.00	65.8	-15.1%
19.9.2	<b>Stateroom Desks</b>			
	HON 38000 Series, or equal (1) 48" x 24" work desks (right or left pedestal as appropriate) with hutch	\$1,550.00	72.5	-
	Option 1: RBF Interiors remanufactured 30"x45" Steelcase 9000 series single ped. desk/overhead sto.	\$1,084.00	100.0	+27.5%
	Option 2: Global Industries Streamline Series SD3048FG/SH1548	\$2,328.00	66.6	-5.8%
	(1) 36" x 72" double pedestal work desk with lockable drawers and center drawer	\$1,780.00	67.8	-
	Option 1: RBF Interiors 30"x75" remanufactured Steelcase 9000 series #9072CR	\$912.00	100.0	+32.2%
	Option 2: Global Industries Streamline Series SD3672BF/SDCD	\$2,110.00	75.8	+8.0%
	HON 10500 Series Extended Corner Workstation, or equal (1) 36" X 72" double pedestal work desk with lockable drawers and center drawer	\$1,580.00	77.6	-
	Option 1: RBF Interiors 36"x72" computer desk with corner and work return	\$1,428.00	100.0	+22.4%
	Option 2: Global Industries Halton Series H3672D4/CD20	\$1,708.00	75.9	-1.7%
19.9.3	<b>Stateroom File Cabinets</b>			
19.10.5	HON 400 Series, or equal, 4-drawer, lockable, with baked enamel finish (42" wide)	\$840.00	76.2	-
	Option 1: RBF Interiors remanufactured Steelcase 9000 series 4 drawer 42" lateral file #842461	\$712.00	100.0	+23.8%
	Option 2: Global Total Office 9300 Seires 9342-4F1H	\$1,508.00	66.8	-9.4%
19.9.4	<b>Side Chairs</b>			
19.10.1	Krueger Matrix, or equal, with fixed seat and back cushions (FR foam, non skid glides)	\$472.00	85.5	-
	Option 1: American Seating Acton Stack Chair AC1220 upholstered	\$339.00	92.5	+7.0%
	Option 2: Allseating "Rainbow" 33650-NA-EB-F2-SBLAC sled base armless stack chair	\$424.00	92.5	+7.0%
19.9.5	<b>Executive Chairs</b>			
19.10.2	Krueger P2M, or equal (Piretti 2000 series managerial with adjustable arms/polycarboante back)	\$1,215.00	84.9	-
	Option 1: American Seating Cue 3 task chair	\$845.00	90.0	+5.1%
	Option 2: Allseating "Presto" midback task w/ deluxe tilt J-bar and adj. arms 52080-AT-D-F2-SBLAC	\$847.00	97.4	+12.6%
19.10.3	<b>Lounge Booth/Table</b>			
	Turnbull 2450 Series 6'-6" long , or equal with a DuPont Corian, or equal top. Seat and backs shall be vinyl upholstered and replaceable.			
19.10.6	<b>Miscellaneous Desks</b>			
	HON Stationmaster Modular Series, or equal 36" x 72" double pedestal work desk with lockable drawers and center drawer	\$1,655.00	77.6	-
	Option 1: RBF Interiors 36" x 72" double pedestal work desk with lockable drawers and center drawer	\$1,498.00	100.0	+22.4%
	Option 2: Global Total Office Connectables Series (cnru3072/cgcntlg50p/bwp23bbf/gwp23ff)	\$1,952.00	74.2	-3.4%
19.10.8	<b>Bookcases</b>			
	HON S72, or equal open front, steel, 34-1/2" wide, 5-shelf bookcase	\$405.00	73.5	-
	Option 1: RBF Interiors OFBA40361272 Sandusky bookcase	\$299.00	100.0	+26.5%
	Option 2: Global Total Office 9100 Series 91SBCS-36	\$535.00	69.0	-4.5%

**SECTION 19 - FURNITURE AND FURNISHINGS**

19.10.14	Ship's Office Couch	Cost (Inst.)	Score	% Diff.
	Sofa Bed, Turnbull Classic Case, CC-603 Series, or equal	\$4,480.00	67.5	-
	Option 1: Robicheaux Manufacturing 8442 SB	\$10,070.00	63.1	-4.3%
	Option 2: Custom Ship Interiors	\$3,280.00	80.0	+12.5%
19.10.15	Medical Couch	Cost (Inst.)	Score	% Diff.
	single Pullman Berth, Turnbull Classic Case, CC-600 Series, or equal	\$2,450.00	73.1	-
	Option 1: Robicheaux Manufacturing	\$4,810.00	67.2	-5.9%
	Option 2: Custom Ship Interiors	\$2,350.00	80.0	+6.9%
19.11	Lockers	Cost (Inst.)	Score	% Diff.
	Turnbull L-100 Series, or equal with a shelf, coat rod, louvered doors. Single tier 15" w x 24" d x 72" h	\$1,030.00	74.2	-
	Double tier shall fall within same perimeter dimensions.			
	Option 1: Robicheaux Manufacturing	\$3,555.00	64.7	-9.4%
	Option 2: Custom Ship Interiors	\$1,130.00	80.3	+6.1%

**SECTION 20 - PLUMBING FIXTURES AND ACCESSORIES**

20.4	Water Closets	Cost (Inst.)	Score	% Diff.
	Kohler Highcrest K-4302-C, ADA, or equal. Elongated white bowls, open front seats, no covers. top spud	\$398.93	76.7	-
	Option 1: Gerber #25-730 white ADA elongated top spud bowl	\$420.52	75.6	-1.0%
	Option 2: American Standard, Madera ADA with Everclean (1.1 or 1.6 gpf) top spud #3461.001-020	\$515.20	79.7	+3.0%
	Kohler Kingston K-4329, ADA, or equal, & closet hanger for wall hung-rear spud	\$708.51	77.5	-
	Option 1: American Standard Afwall, rear spud, with Everclean (1.28 gpf) #3353.001-020, rear spud	\$560.40	84.2	+6.7%
	Option 2: Crane Placidus #3H723, 1.6 gpf, back spud, ADA, with everclean seat	\$574.80	74.5	-3.0%
	Sloan Optima Systems 152-1.6 ES-Slow consumption flushometers w/Optima 1500-Lself adaptive infrared sensor "YI" wall bumpers and override switching yoke assembly, or equal	\$460.00	72.5	-
	Option 1: American Standard, #6065.161-1.6 gpf, can be installed right or left handed	\$572.80	68.6	-3.9%
	Option 2: Zurn- #ZEMS6152AV-WSI Zurn flush valve	\$481.00	71.6	-0.9%
	Sloan GW Optima Plus 8111 SF low consumption flushometers with "YI" wall bumpers or equal	\$740.00	64.9	-
	Option 1: American Standard selectronic flowise toilet flush valve 1.28 gpf, top spud	\$572.80	68.5	+3.6%
	Option 2: Zurn-ZER6000AV-SWI Flush valve	\$459.00	72.5	+7.6%
20.6.1	Lavatories - Passenger Areas	Cost (Inst.)	Score	% Diff.
	Crane 1H-364-V, or equal, vitreous china, grit drain, 8-5260 adjustable "P" trap (1-1/4") with clean out and waste to wall. Color: White.	\$761.00	79.2	-
	Option 1: American Standard #9141.011-020 wheel chair users bathroom sink, 4" c.c., white	\$700.00	80.7	+1.5%
	Option 2: Kohler Morningside wall mount wheel chair lavatory #K12636, white, 4" c.c.	\$637.01	82.5	+3.3%
	Technical Concepts AutoFaucets using Surround Sensor Technology, TC #401818, or equal, no touch control electronic faucet with sensor and spout.	\$536.00	77.1	-
	Option 1: American Standard, #6055.205 Innsbrook with Selectronic tech., DC powered, .5 gpm	\$528.00	82.4	+5.3%
	Option 2: Symmons ultra sense faucet, 1.5 gpm, vandal resistant with grid drain	\$524.22	77.5	+0.4%
	Technical Concepts AutoFaucets using Surround Sensor Technology, TC #500484, or equal, no touch control electronic faucet with sensor and spout of an ADA approved type.	\$698.00	79.5	-
	Option 1: American Standard, #6055.205 Innsbrook with Selectronic tech., DC powered, .5 gpm	\$739.00	78.6	-0.9%
	Option 2: Symmons ultra sense faucet, 1.5 gpm, vandal resistant, with grid drain	\$594.22	77.5	-2.0%
	Technical Concepts OneShot Automatic Soap System, TC #401310, or equal, and powered by an AC adapter, TC #490071, or equal. TC #401543 soap refills with each dispenser.	\$364.69	75.5	-
	Option 1: ASI, automatic deck mounted soap dispenser, #20333, holds 54 oz., 4-D-batteries, only one on market that is re-fillable, least expensive for ownership*	\$245.95	81.8	+6.3%
	Option 2: Bobrick #826.18 automatic soap dispenser and starter kit	\$236.95	82.5	+7.0%

**SECTION 20 - PLUMBING FIXTURES AND ACCESSORIES**

20.7	Urinals - Men's Restroom on Passenger Deck	Cost (Inst.)	Score	% Diff.
	ADA urinal Crane Manhattan Model 7307, white, or equal.		Disc.	
	Option 1: Crane #7308.100 - top spud only, color: white	\$357.20	81.7	-
	Option 2: American Standard, #6211.010- back spud, color white, with strainer	\$514.80	75.5	-6.1%
	option 3: American Standard #6506.011-020 back spud, color white, with strainer	\$514.00	78.1	-3.6%
	with Sloan Optima Systems 195-1.0 ES-S, or equal, low consumption flushometer	\$395.00	82.5	-
	Option 1: American Standard selectronic urinal flush valves 1gpf-#6063.101 top spud	\$502.80	78.2	-4.3%
	Option 2: American Standard, selectronic flowise urinal flush valve, .5 gpf, top spud	\$502.80	80.7	-1.8%
	An Optima EL-1500-L self-adaptive infrared sensor, and override switching yoke assembly, or equal, shall be provided for the ADA urinal.			
20.9	Toilet Stall Partitions	Cost (Inst.)	Score	% Diff.
	Bobrick, 1090 Sierra Series Solid Color Reinforced Composite (SCRC) or equal, floor to ceiling anchored and include complete hardware- per stall \$, 4 colors avail., waterproof, greenest/recyclable content	\$2,080.00	81.6	-
	Option 1: Global stainless steel, -per stall, very durable	\$1,954.00	76.9	-4.7%
	Option 2: Comtec solid Polymer, per stall	\$1,900.00	83.3	+1.7%
20.16	Drinking Fountains	Cost (Inst.)	Score	% Diff.
	Elkay Barrier Free, Dual Water Cooler, Model EBFATL-8, or equal, stainless steel, bi-level fountain, fitted with anti-squirt bubblers and anti-splash ridges		Disc.	
	Option 1: Elkay Bi-level cooler #EZSTL8CS, 1/2SWTX3/8od w/ 1-1/2" P-Trap w/ deep ESCH	\$1,161.11	77.5	-
	Option 2: Halsey Taylor #HTV-8-BL-Q-TTG, Voyager Series, barrier free, impact resistant single level drinking fountain Elkay Water Cooler, Model EFHA-8, or equal, fitted with anti-squirt and anti-splash ridges	\$1,642.00	71.6	-5.9%
	Option 3: Halsey Taylor #SCWT8A-CB-Q, stainless steel, 370 watts, Deluxe floor-standing	\$448.00	77.5	+0.0%
20.17	Accessories	Cost (Inst.)	Score	% Diff.
	Shower Control Valve- Chicago Faucet Co. #1762 Shower Control Valve and Head		Disc.	
	Option 1: Symmons #BP56-1-X Temptrol II shower with stop	\$149.77	82.5	
	Option 2: Kohler K-T6910-2A-CP/K-304-K-NA Rite Temp/Pressure-Balancing	\$257.00	74.2	
	Electric hand dryer Dyson Airblade	\$1,539.00	66.6	
	Option 1: Excel Dryer, #XL-BW automatic, surface mount, thermo plastic	\$510.00	85.0	+18.4%
	Option 2: Mitsubishi jet towel, dry 5-6 sec., 7 yr. wear warranty with 1,000 dries per day	\$1,440.00	67.1	+0.5%
	Note: all Bobrick accessories listed below have equivalent pieces through Bradley Corporation or American Specialties, Inc. (ASI) and will be priced and perform equally.			
	Shower Grab Bar Bobrick B-6206x14- (model not found-will need more info tfor a substitute)			
	Soap Dish Bobrick B-680 stainless steel			
	Soap Dispenser, Liquid Sloan ESD-200			
	Towel Bar, 18", with Shelf Bobrick B-676 stainless steel			
	Robe Hook Bobrick B-672 stainless steel			
	Toilet Seat Cover-Dispenser Bobrick B-221 stainless steel			
	Medicine Cabinet Bobrick B-398 or B-299 stainless steel, Mirror 17" x 26-5/8", w/adj. shelf			
	Mirror/Shelf Bobrick B-292 1620 stainless steel, 16" w x 20" h, integral self 5" deep			
	Hook Strip Bobrick B-232 x 24 stainless steel			
	Utility Shelf mounted to toilet partition Bobrick B-287 Folding Shelf, 14-1/2" x 5-3/4"			
	Sanitary Napkin Disposal Bobrick B-254 stainless steel			
	Folding Utility Shelf Bobrick B-287 stainless steel			
	Grab Bar, 36" x 54" Handicapped Bobrick B-6237 stainless steel			
	Surface Mount Sanitary Dispenser Bobrick B-282-25 stainless steel			
	Coat Hook Bobrick B-682 aluminum			
	Toilet Grab Bar, 12" Bobrick B-6206 12 stainless steel			
	Hook and Bumper Bobrick B-212 aluminum			
	Waste Receptacle Bobrick B-2280 stainless steel, 21 gallon, Open Top			
	Mirror, 30" high (full length of vanity) Minimum 1/4 inch thick			
	Mirror, 18" x 30", Tilt Bobrick B-293 1830 stainless steel			

**SECTION 25 - JOINER WORK AND INTERIOR DECORATION**

25.4	Continuous Ceiling System	Cost (Inst.)	Score	% Diff.
	Continuous 300mm Danacoustic, or equal, continuous and modular construction. Each module 200mm wide and perforated with 1.8mm holes on 3.5mm centers.			
		\$21.60	80.8	-
	Option 1: Gage Corporation System D1.1 2'x2' snap in Aluminum ceiling tiles	\$23.35	98.1	+17.3%
	Option 2: Dampa Marine Ceilings Dcc 300/200 Aluminum panels	\$23.75	91.1	+10.2%
25.5	Stanchion Trim	Cost (Inst.)	Score	% Diff.
	Formica Corporation Flexible Tambour, or equal			
	Note: Formica does not make tambour--see Option 1 below for alternate.			
	Option 1: Omega Products 1/2" wide slat Formica finished tambour HPL-801/Formica 1816-58 sq. ft.	\$21.07	60.6	-
	Option 2: Muraspec "Stratflex Colour" PVC self-adhesive film (4'wide x 50.75 yards long roll) sq. ft. \$	\$14.42	62.2	+1.6%
	Option 3: Painted Steel	\$7.50	92.5	+31.9%
25.9	Joiner System: See Section 25 Narrative (See Appendix B)			

**Summary Table – Major Item Total Installed Costs**

**MAJOR ITEM SUMMARY - TOTAL INSTALLED COST PER VESSEL**

6.11	Safety Flooring	Total Inst. Cost	Score	% Diff.
	Tarkett Inc., Azrock, vinyl composition tile (VCT) or equal in 1/8" thick x 12" x 12"; coved up 6"	\$74,750	74.2	-
	Option 1: Tarkett Inc., Azrock, Premium VCT, Granite SR 12"x12"	\$82,225	72.3	-1.8%
	Option 2: Tarkett, Johnsonite, Rubber Flooring 24"x24"	\$149,500	86.7	+12.5%
19.7.1	Passenger Transit Seats	Total Inst. Cost	Score	% Diff.
	Transit seats shall be by Turnbull S-2700 Series, or equal (2-seater with table)	\$261,936	90.8	-
	Option 1: Beurteaux Ocean Club	\$391,272	82.6	-8.3%
	Option 2: UES, Int. TS-mS480-950HB with TS-SC450 removable seat cushion	\$306,000	87.2	-3.6%
19.7.2	Bench Settees	Total Inst. Cost	Score	% Diff.
	Turnbull TEI-2400WA Series: Clamshell Seating, or equal. (60" wide single)	\$81,480	78.3	-
	The space under the seating shall be utilized for life jacket stowage			
	Option 1: Beurteaux Bench Settee with life jacket storage (6 PFD's for a 60" bench)	\$172,757	65.1	-13.2%
	Option 2: Robicheaux Manufacturing single settee with storage below	\$346,775	60.9	-17.5%
25.4	Continuous Ceiling System	Total Inst. Cost	Score	% Diff.
	Continuous 300mm Danacoustic, or equal, continuous and modular construction. Each module 200mm wide and perforated with 1.8mm holes on 3.5mm centers.			
		\$428,544	80.8	-
	Option 1: Gage Corporation System D1.1 2'x2' snap in Aluminum ceiling tiles	\$463,264	98.1	+17.3%
	Option 2: Dampa Marine Ceilings Dcc 300/200 Aluminum panels	\$471,200	91.1	+10.2%

# **Appendix A**

## Item Evaluation Calculation

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WSF 144-Auto Ferries Furniture and Fittings Cost -Benefit Analysis

	Acquisition				Maintenance					Disposal		Total Score	
	cost	install	total	rel. price	avail.	dura.	maint.	repl.	safety	rec.	req's		
	Maximum Score				20	10	15	20	15	10	5		5
<b>SECTION 6 - DECK COVERINGS</b>													
6.8	Poured Decking (Wet Spaces)												
	Dex-O-Tex Terrazzo M (Fine), or equal DFS 06 (Warm Gray)	\$10.00	\$2.69	\$12.69	1.1	1	1	2	1	1	3	2	82.0
	Option 1: PolySpec IMO LUX	\$9.61	\$2.69	\$12.30	1.1	1	1	2	1	1	3	2	82.5
	Option 2: Altro Atlas			\$11.30	1.0	1	2	2	2	1	2	2	70.0
6.9	Deck Coverings/Carpeting												
	Lees Squared Carpet Squares with Super Self Lock system, Pattern "Horsepower" (sq. yard)	\$29.00	\$12.00	\$41.00	1.2	1	1	1	1	1	1	1	96.8
	Option 1: Forbo Flotex floxed textile flooring pattern "Montana" tiles (sq. yard)	\$33.03	\$12.00	\$45.03	1.3	1	1	1	1	1	3	1	92.0
	Option 2: Shaw Contract Group Commercial Carpet Tiles pattern "Evolve" tiles (sq. yard)	\$22.43	\$12.00	\$34.43	1.0	1	1	1	1	1	1	1	100.0
6.10	Wainscoting (See Appendix B)												
6.11	Safety Flooring												
	Tarkett Inc., Azrock, vinyl composition tile (VCT) or equal (sq. foot)	\$1.00	\$4.00	\$5.00	1.0	1	2	3	1	2	1	1	74.2
	in 1/8" thick x 12" x 12"; covered up 6"												
	Option 1: Tarkett Inc., Azrock, Premium VCT, Granite SR 12"x12" (sq. foot)	\$1.50	\$4.00	\$5.50	1.1	1	2	3	1	2	1	1	72.3
	Option 2: Tarkett, Johnsonite, Rubber Flooring 24"x24" (sq. foot)	\$4.00	\$6.00	\$10.00	2.0	1	1	1	1	1	3	1	86.7
6.16	Safety Walk-Off Matting												
	Bonar Floors Inc. Coral Duo (sq. yard)	\$57.95	\$12.00	\$69.95	1.5	1	1	1	2	2	3	1	77.9
	Option 1: Lees First Step Modular Tiles (sq. yard)	\$48.00	\$12.00	\$60.00	1.3	1	1	1	1	1	1	1	96.0
	Option 2: Construction SpecialtiesDRTN Duration Entrance Carpet (sq. yard)	\$36.00	\$12.00	\$48.00	1.0	1	1	1	2	1	3	1	89.2
6.17	Passenger Deck Safety Walk-Off Gratings												
	WSF standard Safe-T-Span T-1210-ISOFR light grey (sq. foot, approx)	\$22.46	\$8.75	\$31.21	1.0	2	2	1	1	1	2	2	82.5
	Option 1: Source Floors - PediTred (sq. foot, approx)	\$36.70	\$8.75	\$45.45	1.5	1	1	1	1	1	2	2	88.7
	Option 2: Pawling Drain-Well, Maxi-Tuft - RG-250-MLW (sq. foot, approx)	\$47.92	\$8.75	\$56.67	1.8	1	1	1	1	1	2	2	86.0
<b>SECTION 19 - FURNITURE AND FURNISHINGS</b>													
Maximum Score													
				25	10	15	10	25	5	5	5	100	
19.7.1	Passenger Transit Seats												
	Seats and backs shall be Naugahyde Marblestone, or equal and replaceable.	\$30.00	\$70.00	\$100.00	1.0	1	1	1	1	2	3	1	93.2
	Option 1: Design Tex "Friendly Faux" (meets IMO over FR foam)	\$32.75	\$70.00	\$102.75	1.1	1	1	1	1	2	3	1	92.5
	Option 2: Spradling "Intaglio Designs" (meets IMO)	\$26.00	\$70.00	\$96.00	1.0	1	1	1	1	2	3	1	94.2
	Transit seats shall be by Turnbull S-2700 Series, or equal (2-seater with table)	\$753.00	\$210.00	\$963.00	1.0	3	1	1	1	1	2	1	90.8
	Option 1: Beurteaux Ocean Club	\$1,228.50	\$210.00	\$1,438.50	1.5	3	1	1	1	1	2	1	82.6
	Option 2: UES, Int. TS-mS480-950HB with TS-SC450 removable seat cushion	\$915.00	\$210.00	\$1,125.00	1.2	3	1	1	1	1	2	1	87.2
19.7.2	Bench Settees												
	Turnbull TEI-2400WA Series: Clamshell Seating, or equal. (60" wide single)	\$490.00	\$350.00	\$840.00	1.0	3	1	1	2	1	2	1	78.3
	The space under the seating shall be utilized for life jacket stowage												
	Option 1: Beurteaux Bench Settee with life jacket storage (6 PFD's for a 60" bench)	\$1,431.00	\$350.00	\$1,781.00	2.1	3	1	1	2	1	2	1	65.1
	Option 2: Robicheaux Manufacturing single settee with storage below	\$3,225.00	\$350.00	\$3,575.00	4.3	2	1	1	2	1	2	1	60.9
19.7.3	Lounge Booths/Table												
19.7.6	Table Turnbull 2510 (60" long) cantilevered with 1 ped.												
19.10.10	Bases and frames shall be of aluminum construction.												
	Option 1: Beurteaux	\$463.50	\$280.00	\$743.50	1.0	3	1	1	2	1	2	1	78.3
	Option 2: Robicheaux Manufacturing 60" x 30" cantilevered with 1 ped.	\$2,780.00	\$280.00	\$3,060.00	4.1	2	1	1	2	1	2	1	61.1
19.7.4	Cafeteria Seating												
	Turnbull 200 Series (200-002 & 200-004-A) or equal, dual post cantilever tables (2 person for budget for two (2) or four (4) persons. Base and frames shall be constructed of aluminum with vinyl upholstered seat and back.	\$823.00	\$350.00	\$1,173.00	1.1	3	1	1	2	1	2	1	76.8
	Option 1: Plymold Cluster seating-Jupiter 54002S, seats6720DS, top 24023DE	\$750.00	\$350.00	\$1,100.00	1.0	2	1	1	2	1	2	1	80.0
	Option 2: Beurteaux Ocean Diner fixed pedestal seat w/ Ocean Diner fixed pedestal table	\$1,084.50	\$350.00	\$1,434.50	1.3	3	1	1	2	1	2	1	72.5

WSF 144-Auto Ferries Furniture and Fittings Cost -Benefit Analysis

	Acquisition				Maintenance					Disposal		Total Score
	cost	install	total	rel. price	avail.	dura.	maint.	repl.	safety	rec.	req's	
19.7.5	Exterior Seats											
	Turnbull W-2100-OB Series with WSF accent slats, or equal. (72"wide-3 seat)											
	\$1,089.00	\$280.00	\$1,369.00	1.6	3	1	1	2	1	1	1	71.0
	Option 1: Beurteaux Ocean Cafe 3-seat											
	\$553.00	\$280.00	\$833.00	1.0	3	1	1	2	1	1	1	80.8
	Option 2: UES, Int. TS-mS480-950HB											
	\$1,155.00	\$280.00	\$1,435.00	1.7	3	1	1	2	1	1	1	70.3
19.8.3	Counters and Vanities											
	DuPont Corian 300 Series Ready-To-Install One-Piece vanity top and bowls, or equal.											
	\$330.00	\$280.00	\$610.00	1.3	2	1	1	3	2	3	2	64.1
	Dimensions: 24" d x 36" h; 4" backsplash and 2-1/2" front self edge.											
	Option 1: Swanstone VTB1937 solid color with intergral sink											
	\$186.66	\$280.00	\$466.66	1.0	2	1	1	3	2	3	2	70.0
	Option 2: Swanstone counter and splash with Kohler K2609 undermount stainless steel sink											
	\$421.33	\$280.00	\$701.33	1.5	2	1	1	2	1	2	2	69.1
19.8.4	Amenity Bars											
	DuPont Corian counter tops, or equal.											
19.9.1	Berths											
	Turnbull Classic Case, CC604 Series or equal (double with base)											
	\$1,347.00	\$210.00	\$1,557.00	1.0	3	1	1	2	1	1	1	80.8
	Berth shall be fitted with a personal article shelf and (4) drawers.											
	Option 1: Robicheaux Manufacturing 8436 closed base, double											
	\$5,780.00	\$210.00	\$5,990.00	3.8	2	1	1	2	1	1	1	64.0
	Option 2: Custom Ship Interiors											
	\$4,500.00	\$210.00	\$4,710.00	3.0	2	1	1	2	1	1	1	65.8
19.9.2	Stateroom Desks											
	HON 38000 Series, or equal											
	\$1,200.00	\$350.00	\$1,550.00	1.4	2	1	1	2	1	2	1	72.5
	(1) 48" x 24" work desks (right or left pedestal as appropriate) with hutch											
	Option 1: RBF Interiors remanufactured 30"x45" Steelcase 9000 series single ped. desk/overhead st											
	\$734.00	\$350.00	\$1,084.00	1.0	1	1	1	1	1	1	1	100.0
	Option 2: Global Industries Streamline Series SD3048FG/SH1548											
	\$1,978.00	\$350.00	\$2,328.00	2.1	2	1	1	2	1	2	1	66.6
19.9.2	Stateroom Desks (cont'd)											
	(1) 36" x 72" double pedestal work desk with lockable drawers and center drawer											
	\$1,360.00	\$420.00	\$1,780.00	2.0	2	1	1	2	1	2	1	67.8
	Option 1: RBF Interiors 30"x75" remanufactured Steelcase 9000 series #9072CR											
	\$492.00	\$420.00	\$912.00	1.0	1	1	1	1	1	1	1	100.0
	Option 2: Global Industries Streamline Series SD3672BF/SDCD											
	\$1,690.00	\$420.00	\$2,110.00	2.3	2	1	1	1	2	2	1	75.8
	HON 10500 Series Extended Corner Workstation, or equal											
	\$1,300.00	\$280.00	\$1,580.00	1.1	2	1	1	2	1	2	1	77.6
	(1) 36" X 72" double pedestal work desk with lockable drawers and center drawer											
	\$1,148.00	\$280.00	\$1,428.00	1.0	1	1	1	1	1	1	1	100.0
	Option 1: RBF Interiors 36"x72" computer desk with corner and work return											
	\$1,428.00	\$280.00	\$1,708.00	1.2	2	1	1	2	1	2	1	75.9
	Option 2: Global Industries Halton Series H3672D4/CD20											
19.9.3	Stateroom File Cabinets											
19.10.5	HON 400 Series, or equal, 4-drawer, lockable, with baked enamel finish (42" wide)											
	\$490.00	\$350.00	\$840.00	1.2	2	1	1	2	1	2	1	76.2
	Option 1: RBF Interiors remanufactured Steelcase 9000 series 4 drawer 42" lateral file #842461											
	\$362.00	\$350.00	\$712.00	1.0	1	1	1	1	1	1	1	100.0
	Option 2: Global Total Office 9300 Seires 9342-4F1H											
	\$1,158.00	\$350.00	\$1,508.00	2.1	2	1	1	2	1	2	1	66.8
19.9.4	Side Chairs											
19.10.1	Krueger Matrix, or equal, with fixed seat and back cushions (FR foam, non skid glides)											
	\$402.00	\$70.00	\$472.00	1.4	2	1	1	1	1	2	1	85.5
	Option 1: American Seating Acton Stack Chair AC1220 upholstered											
	\$269.00	\$70.00	\$339.00	1.0	2	1	1	1	1	2	1	92.5
	Option 2: Allseating "Rainbow" 33650-NA-EB-F2-SBLAC sled base armless stack chair											
	\$354.00	\$70.00	\$424.00	1.3	1	1	1	1	1	2	1	92.5
19.9.5	Executive Chairs											
19.10.2	Krueger P2M, or equal (Piretti 2000 series managerial with adjustable arms/polycarboante back)											
	\$1,075.00	\$140.00	\$1,215.00	1.4	2	1	1	1	1	2	1	84.9
	Option 1: American Seating Cue 3 task chair											
	\$705.00	\$140.00	\$845.00	1.0	2	1	1	1	2	2	1	90.0
	Option 2: Allseating "Presto" midback task w/ deluxe tilt J-bar and adj. arms 52080-AT-D-F2-SBLAC											
	\$707.00	\$140.00	\$847.00	1.0	1	1	1	1	1	2	1	97.4
19.10.6	Miscellaneous Desks											
	HON Stationmaster Modular Series, or equal											
	\$1,305.00	\$350.00	\$1,655.00	1.1	2	1	1	2	1	2	1	77.6
	36" x 72" double pedestal work desk with lockable drawers and center drawer											
	\$1,148.00	\$350.00	\$1,498.00	1.0	1	1	1	1	1	1	1	100.0
	Option 1: RBF Interiors 36" x 72" double pedestal work desk with lockable drawers and center draw											
	\$1,602.00	\$350.00	\$1,952.00	1.3	2	1	1	2	1	2	1	74.2
	Option 2: Global Total Office Connectables Series (cnru3072/cgcntlg50p/bwp23bbf/gwp23ff)											
19.10.8	Bookcases											
	HON S72, or equal open front, steel, 34-1/2" wide, 5-shelf bookcase											
	\$265.00	\$140.00	\$405.00	1.4	2	1	1	2	1	2	1	73.5
	Option 1: RBF Interiors OFBA40361272 Sandusky bookcase											
	\$159.00	\$140.00	\$299.00	1.0	1	1	1	1	1	1	1	100.0
	Option 2: Global Total Office 9100 Series 91SBC5-36											
	\$395.00	\$140.00	\$535.00	1.8	2	1	1	2	1	2	1	69.0

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	Acquisition				Maintenance					Disposal		Total Score
	cost	install	total	rel. price	avail.	dura.	maint.	repl.	safety	rec.	req's	
19.10.14 Ship's Office Couch												
Sofa Bed, <u>Turnbull Classic Case, CC-603 Series, or equal</u>	\$4,200.00	\$280.00	\$4,480.00	1.4	3	1	1	3	1	2	1	67.5
Option 1: Robicheaux Manufacturing 8442 SB	\$9,790.00	\$280.00	#####	3.1	2	1	1	2	1	2	1	63.1
Option 2: Custom Ship Interiors	\$3,000.00	\$280.00	\$3,280.00	1.0	2	1	1	2	1	2	1	80.0
19.10.15 Medical Couch												
single Pullman Berth, <u>Turnbull Classic Case, CC-600 Series, or equal</u>	\$2,100.00	\$350.00	\$2,450.00	1.0	3	1	1	3	1	2	1	73.1
Option 1: Robicheaux Manufacturing	\$4,460.00	\$350.00	\$4,810.00	2.0	2	1	1	2	1	2	1	67.2
Option 2: Custom Ship Interiors	\$2,000.00	\$350.00	\$2,350.00	1.0	2	1	1	2	1	2	1	80.0
19.11 Lockers												
<u>Turnbull L-100 Series, or equal with a shelf, coat rod, louvered doors. Single tier 15" w x 24" d x 72"</u>	\$750.00	\$280.00	\$1,030.00	1.0	3	1	1	3	2	1	1	74.2
Double tier shall fall within same perimeter dimensions.												
Option 1: Robicheaux Manufacturing	\$3,275.00	\$280.00	\$3,555.00	3.5	2	1	1	2	1	1	1	64.7
Option 2: Custom Ship Interiors	\$850.00	\$280.00	\$1,130.00	1.1	2	1	1	2	1	1	1	80.3
SECTION 20 - PLUMBING FIXTURES AND ACCESSORIES	Maximum Score				20	10	15	20	20	5	5	100
20.4 Water Closets												
<u>Kohler Highcrest K-4302-C, ADA, or equal. Elongated white bowls, open front seats, no covers, top spud</u>	\$118.93	\$280.00	\$398.93	1.0	2	1	1	2	2	3	2	76.7
Option 1: Gerber #25-730 white ADA elongated top spud bowl	\$140.52	\$280.00	\$420.52	1.1	2	1	1	2	2	3	2	75.6
Option 2: American Standard, Madera ADA with Everclean (1.1 or 1.6 gpf) top spud #3461.001-020	\$235.20	\$280.00	\$515.20	1.3	1	1	1	2	1	3	2	79.7
<u>Kohler Kingston K-4329, ADA, or equal, &amp; closet hanger for wall hung-rear spud</u>	\$358.51	\$350.00	\$708.51	1.3	1	1	1	2	2	3	2	77.5
Option 1: American Standard Afwall, rear spud, with Everclean (1.28 gpf)#3353.001-020, rear spud	\$210.40	\$350.00	\$560.40	1.0	1	1	1	2	1	3	2	84.2
Option 2: Crane Placidus #3H723, 1.6 gpf, back spud, ADA, with everclean seat	\$224.80	\$350.00	\$574.80	1.0	3	1	1	2	2	3	2	74.5
<u>Sloan Optima Systems 152-1.6 ES-Slow consumption flushometers w/Optima 1500-Lself adaptive infrared sensor "YI" wall bumpers and override switching yoke assembly, or equal</u>	\$320.00	\$140.00	\$460.00	1.0	1	1	2	2	2	2	2	72.5
Option 1: American Standard, #6065.161-1.6 gpf, can be installed right or left handed	\$432.80	\$140.00	\$572.80	1.2	1	1	2	2	2	2	2	68.6
Option 2: Zurn-#ZEMS6152AV-WSI Zurn flush valve	\$341.00	\$140.00	\$481.00	1.0	1	1	2	2	2	2	2	71.6
<u>Sloan GW Optima Plus 8111 SF low consumption flushometers with "YI" wall bumpers or equal</u>	\$600.00	\$140.00	\$740.00	1.6	1	1	2	2	2	2	2	64.9
Option 1: American Standard electronic flowise toilet flush valve 1.28 gpf, top spud	\$432.80	\$140.00	\$572.80	1.2	1	1	2	2	2	2	2	68.5
Option 2: Zurn-ZER6000AV-SWI Flush valve	\$319.00	\$140.00	\$459.00	1.0	1	1	2	2	2	2	2	72.5
20.6.1 Lavatories - Passenger Areas												
<u>Crane 1H-364-V, or equal, vitreous china, grit drain, 8-5260 adjustable "P" trap (1-1/4") with clean out and waste to wall. Color: White.</u>	\$411.00	\$350.00	\$761.00	1.2	1	1	1	2	2	2	2	79.2
Option 1: American Standard #9141.011-020 wheel chair users bathroom sink, 4" c.c., white	\$350.00	\$350.00	\$700.00	1.1	1	1	1	2	2	2	2	80.7
Option 2: Kohler Morningside wall mount wheel chair lavatory #K12636, white, 4" c.c.	\$287.01	\$350.00	\$637.01	1.0	1	1	1	2	2	2	2	82.5
<u>Technical Concepts AutoFaucets using Surround Sensor Technology, TC #401818, or equal, no touch control electronic faucet with sensor and spout.</u>	\$396.00	\$140.00	\$536.00	1.0	2	1	1	2	2	2	2	77.1
Option 1: American Standard, #6055.205 Innsbrook with Selectronic tech., DC powered, .5 gpm	\$388.00	\$140.00	\$528.00	1.0	1	1	1	2	2	2	2	82.4
Option 2: Symmons ultra sense faucet, 1.5 gpm, vandal resistant with grid drain	\$384.22	\$140.00	\$524.22	1.0	2	1	1	2	2	2	2	77.5
<u>Technical Concepts AutoFaucets using Surround Sensor Technology, TC #500484, or equal, no touch control electronic faucet with sensor and spout of an ADA approved type.</u>	\$488.00	\$210.00	\$698.00	1.2	1	1	1	2	2	2	2	79.5
Option 1: American Standard, #6055.205 Innsbrook with Selectronic tech., DC powered, .5 gpm	\$529.00	\$210.00	\$739.00	1.2	1	1	1	2	2	2	2	78.6
Option 2: Symmons ultra sense faucet, 1.5 gpm, vandal resistant, with grid drain	\$384.22	\$210.00	\$594.22	1.0	2	1	1	2	2	2	2	77.5
<u>Technical Concepts OneShot Automatic Soap System, TC #401310, or equal, and powered by an AC adapter, TC #490071, or equal. TC #401543 soap refills with each dispenser.</u>	\$224.69	\$140.00	\$364.69	1.5	1	1	1	2	2	2	2	75.5
Option 1: ASI, automatic deck mounted soap dispenser, #20333, holds 54 oz., 4-D-batteries, only one on market that is re-fillable, least expensive for ownership*	\$105.95	\$140.00	\$245.95	1.0	1	1	1	2	2	2	2	81.8
Option 2: Bobrick #826.18 automatic soap dispenser and starter kit	\$96.95	\$140.00	\$236.95	1.0	1	1	1	2	2	2	2	82.5

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	Acquisition				Maintenance					Disposal		Total Score
	cost	install	total	rel. price	avail.	dura.	maint.	repl.	safety	rec.	req's	
20.7	Urinals - Men's Restroom on Passenger Deck											
	ADA urinal Crane Manhattan Model 7307, white, or equal.											
	Disc. ***											
	\$147.20	\$210.00	\$357.20	1.0	1	1	1	2	2	3	2	81.7
	Option 1: Crane #7308.100 - top spud only, color: white											
	\$304.80	\$210.00	\$514.80	1.4	1	1	1	2	2	3	2	75.5
	Option 2: American Standard, #6211.010- back spud, color white, with strainer											
	\$304.00	\$210.00	\$514.00	1.4	1	1	1	2	1	3	2	78.1
	option 3: American Standard #6506.011-020 back spud, color white, with strainer											
	\$325.00	\$70.00	\$395.00	1.0	1	1	1	2	2	2	2	82.5
	with Sloan Optima Systems 195-1.0 ES-S, or equal, low consumption flushometer											
	\$432.80	\$70.00	\$502.80	1.3	1	1	1	2	2	2	2	78.2
	Option 1: American Standard selectronic urinal flush valves 1gpf-#6063.101 top spud											
	\$432.80	\$70.00	\$502.80	1.3	1	1	1	2	1	2	2	80.7
	Option 2: American Standard, selectronic flowise urinal flush valve, .5 gpf, top spud											
	An Optima EL-1500-L self-adaptive infrared sensor, and override switching yoke assembly, or equal, shall be provided for the ADA urinal.											
20.9	Toilet Stall Partitions											
	\$1,030.00	\$1,050.00	\$2,080.00	1.1	3	1	1	2	1	1	1	81.6
	Bobrick, 1090 Sierra Series Solid Color Reinforced Composite (SCRC) or equal, floor to ceiling anchored and include complete hardware- per stall \$, 4 colors avail., waterproof, greenest/recyclable content											
	\$904.00	\$1,050.00	\$1,954.00	1.0	3	1	1	2	2	3	1	76.9
	Option 1: Global stainless steel, -per stall, very durable											
	\$850.00	\$1,050.00	\$1,900.00	1.0	3	1	1	2	1	1	1	83.3
	Option 2: Comtec solid Polymer, per stall											
20.16	Drinking Fountains											
	Elkay Barrier Free, Dual Water Cooler, Model EBFATL-8, or equal, stainless steel, bi-level fountain, fitted with anti-squirt bubblers and anti-splash ridges											
	**DISC.											
	\$881.11	\$280.00	\$1,161.11	1.0	2	1	1	2	2	2	2	77.5
	Option 1: Elkay Bi-level cooler #EZSTL8CS, 1/2SWTX3/8od w/ 1-1/2" P-Trap w/ deep ESCH											
	\$1,362.00	\$280.00	\$1,642.00	1.4	2	1	1	2	2	2	2	71.6
	Option 2: Halsey Taylor #HTV-8-BL-Q-TTG, Voyager Series, barrier free, impact resistant											
20.17	Accessories											
	Shower Control Valve- Chicago Faucet Co. #1762 Shower Control Valve and Head											
	**DISC.		**DISC.									
	\$79.77	\$70.00	\$149.77	1.0	1	1	1	2	2	2	2	82.5
	Option 1: Symmons #BP56-1-X Temprol II shower with stop											
	\$187.00	\$70.00	\$257.00	1.7	1	1	1	2	2	2	2	74.2
	Option 2: Kohler K-T6910-2A-CP/K-304-K-NA Rite Temp/Pressure-Balancing											
	\$1,399.00	\$140.00	\$1,539.00	3.0	2	1	1	2	1	2	2	66.6
	Electric hand dryer Dyson Airblade											
	\$370.00	\$140.00	\$510.00	1.0	1	1	1	2	1	2	2	85.0
	Option 1: Excel Dryer, #XL-BW automatic, surface mount, thermo plastic											
	\$1,300.00	\$140.00	\$1,440.00	2.8	2	1	1	2	1	2	2	67.1
	Option 2: Mitsubishi jet towel, dry 5-6 sec., 7 yr. wear warranty with 1,000 drys per day											
	Note: all Bobrick accessories listed below have equivalent pieces through Bradley Corporation or American Specialties, Inc. (ASI) and will be priced and perform equally.											
	Shower Grab Bar Bobrick B-6206x14- (model not found-will need more info tfor a substitute)											
	Soap Dish Bobrick B-680 stainless steel											
	Soap Dispenser Liquid Sloan ESD-200											
	Towel Bar, 18", with Shelf Bobrick B-676 stainless steel											
	Robe Hook Bobrick B-672 stainless steel											
	Toilet Seat Cover-Dispenser Bobrick B-221 stainless steel											
	Medicine Cabinet Bobrick B-398 or B-299 stainless steel, Mirror 17" x 26-5/8", w/adj. shelf											
	Mirror/Shelf Bobrick B-292 1620 stainless steel, 16" w x 20" h, integral self 5" deep											
	Hook Strip Bobrick B-232 x 24 stainless steel											
	Utility Shelf mounted to toilet partition Bobrick B-287 Folding Shelf, 14-1/2" x 5-3/4"											
	Sanitary Napkin Disposal Bobrick B-254 stainless steel											
	Folding Utility Shelf Bobrick B-287 stainless steel											
	Grab Bar, 36" x 54" Handicapped Bobrick B-6237 stainless steel											
	Surface Mount Sanitary Dispenser Bobrick B-282-25 stainless steel											
	Coat Hook Bobrick B-682 aluminum											
	Toilet Grab Bar, 12" Bobrick B-6206 12 stainless steel											
	Hook and Bumper Bobrick B-212 aluminum											
	Waste Receptacle Bobrick B-2280 stainless steel, 21 gallon, Open Top											
	Mirror, 30" high (full length of vanity) Minimum 1/4 inch thick											
	Mirror, 18" x 30", Tilt Bobrick B-293 1830 stainless steel											

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		Acquisition				Maintenance					Disposal		Total Score	
		cost	install	total	rel. price	avail.	dura.	maint.	repl.	safety	rec.	req's		
SECTION 25 - JOINER WORK AND INTERIOR DECORATION		Maximum Score				25	10	10	15	25	5	5	5	100
25.4	Continuous Ceiling System													
	Continuous 300mm Danacoustic, or equal, continuous and modular construction. Each module 200mm wide and perforated with 1.8mm holes on 3.5mm centers.	\$9.00	\$12.60	\$21.60	1.0	3	1	1	2	1	1	1	80.8	
	Option 1: Gage Corporation System D1.1 2'x2' snap in Aluminum ceiling tiles	\$10.75	\$12.60	\$23.35	1.1	1	1	1	1	1	1	1	98.1	
	Option 2: Dampa Marine Ceilings Dcc 300/200 Aluminum panels	\$11.15	\$12.60	\$23.75	1.1	3	1	1	1	1	1	1	91.1	
25.5	Stanchion Trim													
	Formica Corporation Flexible Tambour, or equal													
	Note: Formica does not make tambour--see Option 1 below for alternate.													
	Option 1: Omega Products 1/2" wide slat Formica finished tambour HPL-801/Formica 1816-58 sq. ft.	\$9.40	\$11.67	\$21.07	2.8	2	1	1	2	1	3	2	60.6	
	Option 2: Muraspec "Stratflex Colour" PVC self -adhesive film (4'wide x 50.75 yards long roll) sq. ft. \$	\$2.75	\$11.67	\$14.42	1.9	2	1	1	2	2	3	2	62.2	
	Option 3: Painted Steel	\$2.50	\$5.00	\$7.50	1.0	1	2	1	1	1	2	1	92.5	
25.9	Joiner System: See Section 25 Narrative (See Appendix B)													

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## **Appendix B**

### Discussion of Items and Alternatives

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## SECTION 6 – DECK COVERINGS

### 6.9 Deck Coverings/Carpet

The Lees carpet tiles needed an actual selection made for the crew areas and most of the tiles do not pass the USCG regulations. Horsepower Modular was selected for this exercise as it was a simple pattern and could be installed monolithic, quarter turn, or vertical ashlar. The pre-applied adhesive makes for an easy installation and also for repairs or replacements. It is able to be recycled but the yarn it is made of is not composed of recycled content. The nylon 6.6 is yarn dyed instead of solution dyed which may impact the look of the carpet over time as solution dyed is more color fast.

For an alternate consideration, Forbo Floor coverings has a flocked vinyl sheet that resembles carpet but is actually a vinyl which means it is water proof. Flotex offers consistent protection against bacteria, including MRSA, E-coli and the development of dust mites. The loops and twists of carpets and the fibers of the yarn trap dirt. The smooth straight upright nylon 6.6 Flotex fibers allow dirt to be removed easily by vacuum cleaning. The product is not able to be recycled but the backing is made of recycled content. The durability of this material and the ease of maintenance will make it outlast more conventional carpet tiles. It does meet the requirements for USCG.

The Shaw carpet tile is comparable to the Lees product but is made of recycled content and is also able to be 100% recycled. It too has a simple pattern and can be installed quarter turn or ashlar but not monolithic. The nylon 6 is a combination of solution dyed and yarn dyed—the yarn dying to add more interest and pattern and perhaps hide soil better. And nylon 6 is able to be produced and recycled with less energy than nylon 6.6. It too is available with a factory-applied adhesive for easy installation for a 150 square yard minimum. It is the least expensive.

### 6.10 Wainscoting

Past failures with using ceramic tile on the walls of restrooms and will require special approvals for specifications in future installations.

As an alternate to ceramic tile, Marlite manufactures a Fiberglas Reinforced Polyester (FRP) called Symmetrix. It is scored to look like ceramic tile and available in several colors. It installs with construction adhesive (Marlite Brand C-375 solvent based adhesive for non-porous surfaces) with the metal wall surface needing to be lightly scuffed with a wire brush prior to using. The material comes in panels that are 48” wide by 8’ long and 3/32” thick (10’ panels in white or almond). Symmetrix has a Sani-Coat sealer to protect the surface against moisture, scratching, staining, mold and mildew. The FRP substrate has high impact resistance and won’t crack. Panels are simply wiped clean. This product will install easily and will be lighter weight than tile. Material scored in a 4”x4” pattern will run \$4.00 per square foot.

### 6.11 Safety Flooring

VCT is actually not considered a safety floor. It has a .6 coefficient of slip when it comes out of the box but, it has to have 6-12 coats of wax put on it because it is porous and brittle. The wax layer makes the coefficient of slip .5 dry. Although it is inexpensive, it must be stripped and waxed to maintain it and, depending on traffic, it will cost about \$1.50-\$2.00 per square foot every year to maintain it. In other words, operators are buying a new floor every few years.

There is a premium VCT (Granite SR) offered by Tarkett that has a textured surface so that it is more slip resistant but maintenance still requires waxing. The tile may only have 2 coats of wax to maintain the coefficient of slip so if the maintenance crew puts on extra coats it will not meet the requirement. Colors are limited.

Rubber tiles from Johnsonite (parent company is Tarkett) have a .8 slip resistant rating wet and 1.0 dry and is by far the safest. Tiles are 24" x 24" and will have the fewest seams of all floors above. There are many options to choose from and there is no waxing. This floor will last the longest and is comfortable under foot. The green drawback is that it cannot, at this point in time, be recycled but Johnsonite is working very hard on this. This type of deck covering is approved by the USCG as long as the installed thickness is less than 3/8" (10 mm) thick, and is installed over an approved underlayment.

#### 6.16 Safety Walk-off Matting

Bonar Coral Duo was selected for the walk-off matting. It is made of nylon and is considered somewhat lightweight at about 20 oz. face weight.

Lees Carpets makes a product (First Step Modular) that meets USCG requirements and is made in tiles with the same pre-applied adhesive option available on the regular carpet tiles which would be preferred for installation and maintenance. It has a lifetime warranty and a face weight of 38 oz.

The third option, from Construction Specialties (DRTN Duration), can be rolled good or tiles and again tiles would be preferred from a maintenance standpoint. It is made of polypropylene which is a naturally water resistant material, has a face weight of 52 oz and is designed for heavy traffic. It is also the least expensive.

## **SECTION 19 – FURNITURE AND FURNISHINGS**

### 19.7.1 Passenger Transit Seats

#### Fabric

Fabric for the covers of the transit seats are to be of Naugahyde Marblestone, or equal. This material is PVC and is not recyclable. Also, it does not meet current USCG or IMO restrictions. The Advanced Beauty Guard finish means it can be disinfected with a diluted bleach solution. One drawback is when vinyl is punctured or cut it is not able to be repaired.

One alternate to consider would be a product from Design Tex fabrics that has superior puncture resistance called Faux Sure. This product meets IMO standards when used over FR foam and is comparably priced to the Naugahyde. It does not have a pattern or texture and is made of 100% Nylon Microfiber. It has a high abrasion resistance and exceeds 100,000 cycles with a wire screen test. The Naugahyde exceeds 100,000 cycles with a cotton duck test so the Design Tex should wear better longer. This product must not be cleaned with any product containing bleach.

A second option is from Spradling International called Intaglio Designs and is made of vinyl like the Naugahyde product so it, too, is not able to be recycled. It is about 15% less expensive and has 4 patterns and textures to choose from. It does meet IMO test standards. In addition, it is treated with Permablock protection which gives it superior antimicrobial protection and anti-

stain protection. This product may be cleaned with a 1 to 4-bleach solution. Most stains can be removed with soap and water including permanent marker.

### Seating

Transit seats are to be Turnbull S-2700 Series, or equal. The style of the 2700 Series is somewhat dated. While these are a satisfactory solution for seating it was difficult to reach and get responses from the sales staff. There is no current website and it has been learned that this company is in the process of being purchased by US Joiner, LLC a major supplier to the military and work boat industries. US Joiner has not participated in the transit seating business from information obtained from the website but they do compete with Turnbull with the casework furniture as they absorbed Hopeman Brothers Marine Interiors in 2003. The Turnbull product currently is manufactured in the U.S. and has an approximate 90-day lead-time for fabrication.

As an option, Beurteaux Ocean Club seating has been compared to the Turnbull 2700 Series. Beurteaux concentrates strictly on transit seating and meets IMO requirements. This product is made in Australia and is not readily available with as much as a 6 month lead-time. There is a U.S. rep if there are any problems but there are very few issues that come up due the experience they have for over 60 years in the ferry and high-speed ferry markets all over the world. Styles are more current for public areas. Fabric covers are easily removed and replaced as they are attached with Velcro so, by maintaining easily stored replacement covers, crew may change out easily.

Another option to consider is UES International, PTY. Ltd transit seating. This too is manufactured in Australia with an approximate 8-10 week lead-time. This is a new design using a web fabric (that can be used outdoors) for the base with a cushioned cover over it. Extra cushion covers can be held in attic stock for easy replacement by the crew if there is soiling or damage to the cushion. The chair can be used without the cushion as well and if there is a spill the liquid will pass right through the seat or back. It does meet IMO standards. The main contribution this seat makes is the weight is 7.5 lbs lighter than the Beurteaux chair and 8 lbs. lighter than the Turnbull chair. In counting the forward passenger seats alone, that would save 2,912 lbs of weight. Since the weight of interior furnishings and materials can impact fuel needs, it may be worth looking into this option. Samples can be provided.

### 19.7.2 Bench Settees; 19.7.3 Lounge Booths/Tables; 19.7.6 Passenger Tables; 19.10.10 Mess Tables

Turnbull TEI-2400WA Series: Clamshell seating is currently selected for the bench and booth seating in the passenger areas. By tilting the seat and back forward one can access life jacket storage beneath. A 60" wide booth will hold eight 4" thick USCG-approved adult life jackets. The seat attaches to the deck with bolts through a flange and the base is open to the floor. If there are spills, the liquid can pass under the base and affect the life jackets stored there. Section 19.7.3 states that "a minimum of forty-one (41) lounge booths with tables" then states that "all other lounge booths shall be provided with a window sill mounted drink table (without cup holders)"...this may need some further clarification as it relates to the drawings as there appears to be 40 lounge booths without tables but with a small shelf that has 2 cup holders.

The tables are to be Turnbull 2510 Series or equal. They are called out to be of aluminum construction but these are actually an aluminum honeycomb construction which is much more

durable and impact resistant than aluminum with a laminate applied over. This should be clarified in this description in section 19.7.6. They are to be of a cantilevered fixed installation. However, the maintenance and cleaning of an independent table mounted on two pedestals can be more desirable as the connection at the windowsill connection can be difficult. Also, a table mounted on the two pedestals can be relocated if there is a reconfiguration that would not include a window. Of course, the height of the window needs to be carefully addressed.

One alternate to Turnbull would be Beurteaux Ocean Lounge seating. There is life jacket storage below but one accesses these from the front with a finger pull that can be tamper controlled but still accessed by passengers in emergencies. They also allow a side or aisle access to the life jacket storage that allows one to open an end panel and slide the jackets out (6 each for a 60" bench) in a bag which is a very clean way to access the jackets without having to lift or remove cumbersome upholstery. With the Turnbull tilt system the tabletop could provide some interference with access. The Beurteaux seats and backs are also more ergonomically shaped and padded but will be at a higher price. Tables are basically the same except Beurteaux offers a tapered design that will allow passengers an easier access in and out of the benches.

Robicheaux Manufacturing offers the same honeycomb aluminum construction for the bench seating as well as the tables making it highly impact resistant. The use of this construction in the bench seating results in a much higher price. The padded seat removes to gain access to the fully enclosed life jacket storage via a removable panel that the padded seat is sitting on. Robicheaux calculates that the storage area will accommodate 25 PFD's that are 12" x 21" x 3" thick (also USCG- approved). This design makes repairs easy as a seat spare can be inserted while the damaged seat is out for repair. The manufacturing lead-time is less than Turnbull or Beurteaux at 6- 8 weeks vs. 12 weeks for Turnbull and 6 months for Beurteaux on an order of this size. Robicheaux and Turnbull are made in the U.S.

#### 19.7.4 Cafeteria Seating

The Turnbull 200 Series is currently specified for the cluster seating. It is an aluminum-extruded frame with cast aluminum seats that can be upholstered. The style is somewhat dated and it appears the seats can be cleaned easily but that they might hold liquid spills.

As an alternate, Plymold makes cluster seating for the food service industry and offers configurations with seats that can be accessed from either side and has ADA-compliant options. A plastic composite seat and table edge (Dur-A-Seat) provide maximum longevity and cleanability over upholstered options. Because they specialize in this type of seating the styles and finish options are greater while being less expensive. Shipping is approximately 20 business days from date of order to make it readily available.

A second option is to use the Beurteaux pedestal mount table with individually floor mounted stools. This provides the best access to the seats and is easily cleaned around with no connecting bar to get in the way. As stated in Section 19.7.1, they have been in the passenger ferry seating business (only) for over 60 years with successful installations worldwide and their styles are very contemporary and clean. They meet IMO standards.

#### 19.7.5 Exterior Seats

The Turnbull bench seat for the exterior seating is called out with the optional accent slats on the back. It is made of aluminum that has been powder coated. The advantage of a bench seat over individual seats is that even allowing 24" for each person, it can actually often allow 18" so more people can fit on a bench.

As an option, Beurteaux has an Ocean Café seat that is also all aluminum and can be fitted to the decks on mounts or a life jacket storage box. Specified in an anodized instead of painted on finish this seat would hold its appearance longer. The individual chairs are closer to 18" wide so a 3-seat unit as compared to a 72" bench has a smaller footprint. More seats could potentially be added across a deck.

The UES seat that is a proposed alternate for the interior can also be used on the exterior without the slipcover. The mesh fabric allows moisture to pass through and has a 10-year warranty for UV degradation. It is actually a round/oval monofilament. Each seat is also approximately 18" wide which could allow more seating. Since the chairs actually match the interior there could be a better overall appeal and attic stock or additional seats can be interchanged if repairs are needed. The weight can again be a factor as these seats are 5 lbs less than each Beurteaux seat.

### 19.8.3 Counters and Vanities

The current specification calls for DuPont Corian 300 Series Ready-to-Install One Piece Vanity Top and Bowls. The dimensions call for a 24" deep top but the 300 Series is actually a prefabricated unit measuring 19" deep by either 25", 31", or 37" widths (and there are double bowl versions from 22" deep x 61" or 73") and is stocked with a 2 week lead time. There are 4 color combinations available with the counters and sinks of 2 different Corian colors. The plan for the women's restroom shows a counter approximately 27'-0" long by 21" deep with a continuous run of vanity top and 10 sinks. The specification will need to be changed to call out the custom counter lengths with integral sinks to be more accurate as one would not want to procure 1 individual vanity top and seam them together to make that length. For purposes of this document and for comparison reasons the 300 Series standard single bowl 19" x 37" product has been used. There is also 100 Series product where the sinks and tops are the same color and cost about 20% less.

For an option to the DuPont Corian product Swanstone was selected. Like Corian, it is an acrylic base material but instead of being cast it is compression molded (will not crack or craze) and has a reinforcing layer that makes it up to 5 times stronger in its impact resistance. The surface is easily renewable just like Corian. For this comparison the product is 40% less expensive than the Corian 300 Series and almost 30% less than the Corian 100 Series. Neither the Corian nor the Swanstone are recyclable.

A second option to be considered is using the Corian or Swanstone vanity tops only with an under mount stainless steel sink. This would facilitate repairs; if one sink becomes damaged the sink can be replaced and only one fixture is unavailable during repair. With the integral sinks the repair would warrant a Corian or Swanstone fabricator to come on the vessel to make the repair since it is actually part of the counter top. The crew would not be able to do this work. The stainless steel sink would hold up very well in this type of installation and is made of recycled material and is able to be recycled as well. This option also provides the best strategy for the maintenance and down time for repairs but is about 30% higher initially.

19.9.1 Berths; 19.9.11 Lockers; 19.10.14 Ship's Office Couch; 19.10.15 Medical Couch

Turnbull Classic Case CC604 Series aluminum crew berths are specified and are of basic construction without sea rails or privacy curtains. They are very cost effective and of minimal design. Drawers are included and for the purposes of comparison a double bunk is used. The lockers (L-100) are also of aluminum construction and can be noisy and dent, doors can become bent and not close properly over time. The medical couch and ship's office couch are standard product retractable and Pullman designs.

Robicheaux Manufacturing offers the honeycomb aluminum construction for these products and they are designed for high use and rough sea conditions. Metal will dent and is noisier than this material and the warranty is for the lifetime of the products. Lead times are good but the price must be considered for these back of house areas. Quantities will impact the pricing but this will still be higher than aluminum construction.

Custom Ship Interiors (CSI) offers a more equal aluminum product with a better lead time and price except in the case of the berths as the CSI design is much more substantial with sea rails and a more enclosed and private space. Their price reflects the additional design elements. As with Robicheaux products, quantities with orders will allow for even more competitive pricing. All three manufacturers' products will be recyclable except for the upholstered parts of the seating and bedding.

19.9.2, .3; 19.10.6 and .8 Crew Office Case goods and Files

The specified desks, files, and bookcases are manufactured by HON and the furniture is manufactured in several plants in the U.S. HON has been in business for over 60 years and they are considered a mid-market product that services budget conscious projects. They do recycle some of their finish materials such as laminate and wood scraps and they seek to conserve raw materials and reduce waste. The selected furniture is a combination of baked enamel metal and laminate finishes and should not damage easily in this environment.

An alternate to consider is to use a remanufactured product—one that has been reclaimed and renewed for resale. In this case RBF ( Remanufactured Business Furniture) restores Steelcase 9000 Series furniture which is a higher end product in terms of style and durability and ends up being much less expensive than the HON products. The 9000 Series was not available for every line item and the sizes vary slightly but overall this is the ultimate “recycled” option. The other products also use recycled materials to create new furniture.

The second alternate is Global Total Office. This product offering can match the HON option for each line item. This is also a combination of painted steel and laminate finishes and this paint is an epoxy powder coat instead of a baked enamel and is considered to be more impact and scratch resistant. This line is manufactured in several locations worldwide and they are noted for their ability to provide most items in a very short turn-around time. There is also a distribution center in Renton, Washington. Although the one-off pricing show this to run a bit higher than HON, with any kind of volume the prices would be comparable.

19.9.4; 19.10.4 Side Chairs

The specified side chair is Krueger International (KI) Matrix stack chair with fixed seat and back cushions. It is made of a solid steel rod frame for high durability and a polypropylene seat and

back. Both materials contain recycled materials and can be recycled. The chairs can be built to meet Cal TB 133 Fire Safety Code. They are 18-7/8" wide by 21-3/4" deep by 32-1/2" high with a seat height of 18". The contoured seat and back are designed for maximum comfort. The chair has a 10-year warranty and is made in the U.S. The chair is made of some recycled content and can be recycled.

One option is similar stack chair from American Seating called the Acton Stacker. The frame is a 14 gauge, tubular steel, Z-shaped style with a 16 gauge steel inner reinforcement for strength and durability and the seat and back are also a polypropylene that is also contoured. This chair is 20" wide by 21-1/2" deep by 30-1/2" high so it is slightly wider for added comfort. It already meets the Cal TB 133 code. The warranty is for 5 years but in this environment there should be no concern. The Acton Stacker also has recycled content and can be recycled. The main advantage of this product is the price. It is made in the U.S.

The second alternate actually a fully upholstered with a 14-gauge steel frame stack chair from Allseating called Rainbow. For this comparison we used a grade 2 vinyl for the upholstery. The chair does have a 10 year warranty as well. It is made of some recycled content and about 56% of the chair is able to be recycled. The dimensions are 20.75" wide by 17-1/2" deep by 33" high and can be made to meet Cal TB 133. The advantage this offers is there is no place to trap dirt and dust around the polypropylene seat where it meets the cushion and it will have more padding for more comfortable seating. It is less than the KI chair but more than the American Seating chair. It is made in the U.S.

#### 19.9.5; 19.10.2 Executive Chairs

The executive chairs are specified as Krueger International (KI) P2M. After some investigation the P2M is actually a part number for the Piretti 2000 Series Collection and P2M is the designation for the Managerial chair. (The Executive chair has a higher back.) That clarification probably should be made in the written document. The chair is 20-1/2" wide by 17-1/2" deep by 34-3/4" to 39-1/4" high with the adjustable seat. It swivels, has an adjustable tilt for the seat, pneumatic height adjustment, adjustable arm rests, flex back mechanism, and an adjustable back angle inclination. It can be constructed to meet CAL TB 133 Fire Safety Code. It is manufactured in the U.S. and is made with some recycled content and some parts can be recycled. KI has a lifetime warranty on this type of chair with a 5-year warranty on controls and casters. Lead-time is 3-4 weeks unless ordered during the summer months when they are fulfilling orders for their educational projects.

One option to this chair is the Cue 3 Full Back from American Seating. The dimensions are 19" wide by 18.5" deep by 37.75" to 43.75" height with the adjustable seat. This mid-level height back is suitable for task-intensive work. It includes all of the features of the KI Piretti chair as far as adjustability with swivel arm caps (will rotate to support arms for intensive computer-related tasks) and the arm width can be expanded for more room, up to 2-1/4". Materials in the chair do have some recycled content and some parts can be recycled. There is a 10-year warranty on the chair including the pneumatic cylinders and 5 years on casters. The lead-time is 2-5 weeks. With the back and seat more detached from each other there is less tendency to harbor dirt. Ultimately, this chair is about 35% less expensive.

A second chair to consider is the Presto chair form Allseating. It is also a mid-back version so the back, as on the Cue 3, is taller than the KI Piretti chair. This chair has a deluxe tilter, heavy-duty control mechanism that covers the same control options as the other 2 chairs plus the adjustable height and width of the arms as in the Cue 3 chair. This chair is manufactured in Canada and is about 35% less expensive. The Presto chair can ship in less than 72 hours in one of their standard fabrics (here priced in a grade 2 vinyl) making it the most readily available. It has some recycled content and about 71% of the chair can be recycled.

## **SECTION 20 – PLUMBING FIXTURES AND ACCESSORIES**

### 20.4 Water Closets

For toilets, the specification lists two Kohler products, one with a top spud (Highcrest K-4302-C) and one wall-hung with a rear spud (Kingston K-4329). American Standard makes two similar products, the Madera top spud with Everclean (#3461.001-020), and the AFWall with Everclean wall-mounted toilet (#3353.001-020). The American Standard toilets are recommended for their growth and stain inhibiting properties. Another option for the top spud toilet is the Gerber #25-730, and an option for the wall-hung toilet is the Crane Placidus #3H723 with Everclean seat. All of the specified and alternative toilets meet ADA requirements.

For flushometers for the top spud toilets, the specification lists a Sloan Optima Systems 152-1.6 ES slow consumption flushometer. One alternative is the American Standard #6065-161-1.6gpf. The American Standard can be installed left or right handed. Another alternative is the Zurn #ZEMS6152AV-WSI flush valve.

For flushometers for the wall-hung toilets, the specification lists a Sloan GW Optima Plus 8111 SF low consumption flushometer. One alternative is the American Standard Selectronic Flowise flush valve, which comes in a simpler top spud mounted option capable of mounting to an alternate configuration of the American Standard wall-hung toilet listed above. Another alternative is a Zurn ZER6000AV-WSI flush valve.

### 20.6.1 Lavatories – Passenger Areas

For the passenger area bathroom sinks, the specification lists a Crane 1H-364-V. One alternative is an American Standard E9141.011-020, and another, less expensive alternative is the Kohler Morningside wall mount lavatory #K12636. There are no major differences between these alternatives besides their prices.

For faucets, the specification lists two Technical Concepts Auto Faucets with Surround Sensor Technology: Models TC #401818 with single-hole mounting and TC #500484 with dual-hole mount on 4" centers. American Standard Innsbrook faucet model #6055.205 is a suitable alternative for both. Symmons Ultra Sense faucet is another possible alternative.

For the automatic soap dispensers, the specification lists a Technical Concepts One Shot Automatic Soap System model TC #401310. This model must be refilled with the manufacturer's specific brand of soap. One alternative is the Bobrick model #826.18, which is similar, but requires special refill bottle which includes a new supply tube and pump mechanism. The American Specialties, Inc. (ASI) automatic deck mounted soap dispenser, model #20333, is a refillable option and would reduce lifetime costs.

### 20.7 Urinals – Men's Restroom on Passenger Deck

The specification lists a Crane Manhattan Model 7307 ADA urinal, which has been discontinued. The replacement model is the Crane #7308.100, and features a top spud only. No Crane ADA urinals come with a back spud. One alternative is the American Standard #6211.010 back spud urinal with 1.0 gallons per flush. The American Standard #6506.011-020 is another back spud urinal but uses as little as 0.7 gallons per flush.

For the flushometer, the specification lists a Sloan Optima Systems model 195-1.0 ES-S. There are two American Standard alternatives; a Selectronic urinal flush valve that uses 1.0 gallon per flush, and a Selectronic Flowise urinal flush valve that uses 0.5 gallons per flush. The American Standard Flowise model is recommended because of its lower water consumption.

### 20.9 Toilet Stall Partitions

The specification calls for a Bobrick 1090 Sierra Series toilet stall partition. This product features an anti-graffiti surface. One item to consider about the Bobrick product is that it may be easy to crack when drilling holes for the mounting hardware. Global Stainless Steel makes an alternative which is very durable. The Global Stainless Steel product only features a 5-year warranty, but it is anticipated that it will last significantly longer. Finally, Comtec makes a solid polymer alternative. Similar to the Bobrick model it has an anti-graffiti surface. The Comtec stalls have a 15-year warranty and are water resistant and recyclable. All three products have similar installed costs, with the Comtec product being slightly cheaper.

### 20.16 Drinking Fountains

The Elkay Model EBFATL-8 drinking fountain which is listed in the specification has been discontinued. An Elkay alternative product is the Bi-level #EZSTL8CS. Halsey Taylor makes an alternative bi-level drinking fountain, the #HTV-8-BL-Q-TTG Voyager Series. The Halsey Taylor has several features, including multiple configuration options, no sharp-corners, and easy service; however it is also more expensive than the Elkay model.

For the crew spaces, no assessment was made of the specific models, as this would have been a redundant comparison of Elkay and Halsey Taylor products. Instead, the relative merits of the two passenger space drinking fountains can be used to determine which manufacturer to use for the crew space drinking fountain.

### 20.17 Accessories

The Chicago Faucet Co. #1762 Shower Control Valve and Head has been discontinued. The Symmons #BP56-1-X Temptrol II and Kohler K-T6910-2A-CP/K-304-K-NA Rite Temp are two similar alternatives. The Symmons Temptrol II is significantly cheaper.

The specification calls for a Dyson Airblade hand dryer. A significantly cheaper option is the Excel Dryer #XL-BW automatic hand dryer. The Excel Dryer has a similar energy use as the Dyson, and features a 10-year warranty while the Dyson only has a 5-year warranty. Another alternative is the Mitsubishi Jet Towel, which can dry in 5-6 seconds, and has a 7-year warranty. The Mitsubishi is almost as expensive as the Dyson. The Excel Dryer is the most readily available of the three options.

The rest of the accessories in the specification are Bobrick products. These were not assessed against the metrics because the two alternative manufacturers, Bradley Corporation and American Specialties, Inc. (ASI), both produce equivalent products for similar prices. Therefore, there are no real comparisons which can be drawn between the three companies.

## **SECTION 25 – JOINER WORK AND INTERIOR DECORATION**

### 25.4 Continuous Ceiling System

The specification calls for Continuous 300 mm DANACOUSTIC, or equal but the type should actually be M300 System. The Danacoustic product is made of steel and is a linear pan ceiling. Experience has been that this type of installation requires more labor to access above the ceilings as more than one panel has to be removed to get to an area needing access and, with the length there is more chance of damaging panels. Note: Danacoustic does have a 2'x2' option as well that may be an option to consider. The steel ceiling called out here will weigh about 2 times as much as the aluminum product which could make an important difference. The lead-time of 10-12 weeks from overseas makes this not readily available as some others. The ceiling is able to be recycled. It was indicated that one man needs about 2.5 hours per square meter to install.

Gage Corporation is made in the United States with domestic materials and is available as a snap-in 2'x2' system (D1.1 system). There is also a metric sized panel option. Access is at each tile and there is a small tool provided to make removing a tile simple. There is not integral lighting but any lighting product can be used to get the desired result. The tiles can be perforated and are available with an acoustical membrane and are supply/returns can be customs fabricated as well as speaker covers. The high quality automotive grade paint system ensures easy maintenance. The tiles are made of 50% recycled content and are recyclable. They are IMO approved.

Dampa Marine Ceilings is a second option and meets the Danacoustic specification exactly. They can also produce the aluminum option as well as the 2'x2' solution. The availability, like the Danacoustic, 10-12 weeks. It is also produced overseas. It does have recycled content. This ceiling system too allows an individual panel to be replaced but again, usually more than one needs to be removed for access.

### 25.5 Stanchion Trim

The specifications call for Formica Corporation Flexible Tambour but Formica does not make a tambour product.

An alternate to this would be Omega National Products HPL -802 with a Formica laminate face. For this comparison #1816-58 Fog dust with matte finish was used. This product is available in 4'x8' or 4'x10' sheets that a 3/16" thick with 1/2' wide slats. The core is medium density hardboard, is designed for indoor use, and should not be exposed to the elements. While it is impact resistant, chipping of the laminate may occur over time.

Another product to consider is by Muraspec called Strataflex. This material is actually self-adhesive PVC that comes in 48" wide by 50 meters long rolls but it can also be purchased by linear meters. For this calculation a full roll was used in the pattern Colours which is a slightly textured matte finish in a solid color. The product is made in Japan with a 1-2 week lead-time.

The advantage is that it is as durable as the substrate it is mounted on, in this case a steel stanchion. Scratches will not be seen as it seals itself. If there is damage, it is easy to repair with another piece applied over the top. It would be clean and free of dust. Strataflex is used extensively in the cruise ship industry and meets IMO requirements. This would also be very lightweight.

### 25.9 Joiner System

This document will address the finish of the joiner system only as a discussion point. The PVC foil with a protective face and/or a laminate cover are extensively used for this type of end use in the ferry and cruise shipping industries as well as the airline industry. They are very durable and easy to clean and most desirable finishes for joiner systems in high use areas. Robicheaux Manufacturing has a system that uses these finishes and is considerably lighter weight than the maximum weights called out in the specification. And their panels are a non-progressive system meaning that, if a panel needs to be removed, one does not have to remove a series of panels to get to it. Non-progressive system might be added to this specification for maintenance purposes. The entire system is also manufactured in the U.S. Custom Ship Interiors is also able to supply panels made in the U.S. that will meet these specifications. A price comparison was not made for this document as a formal bid would have to be made for a true look into this exact specification by the different manufacturers.