

**General Construction Specification
for
UNOLS Standard Portable Scientific Van**

Revision 5
October 2002

General:

This document is intended to be used as the specification for the construction of portable scientific vans used aboard research vessels in the UNOLS (or academic) research fleet. This document may also be used as guidance for institutions or scientists who wish to construct their own vans for use on UNOLS or other research vessels.

The goals of this document are:

- To ensure safe design and construction of portable vans used on UNOLS vessels.
- To standardize certain design elements to best meet the needs of the scientific community.
- To make portable vans no longer “ship specific”, and thus usable throughout the UNOLS fleet.
- To reduce overall cost by facilitating bulk purchase.
- To ensure the ability to transport by common carrier as “containerized cargo”.

This specification includes requirements based on US regulations (46CFR, sub-Chapter “U”), and the UNOLS/RVOC “Research Vessel Safety Standards”. There are currently no international regulations (IMO or other) dictating the construction requirements for portable scientific vans. Some classification society standards for portable structures do exist (ABS and DNV) and were used for guidance in certain areas.

Notes and Highlights:

Notes (shown in italics) are included for informational purposes to aid both the Owner and the Vendor. They are not considered part of the specification requirements per se. Highlighted text is intended to emphasize the critical aspects of the specification and are generally regulatory requirements.

Drawings:

The drawings attached to this specification are for REFERENCE ONLY. They are included only to show intent, not the exact details of final construction. Final construction drawings shall be provided by the vendor.

Intended Purpose:

These vans are intended to be transportable by common carrier between institutions and foreign ports, as well as used on different research vessels. The ships involved may either be USCG inspected or uninspected. They are intended to be secured in a variety of locations on board. This will vary between ships and from project to project. However, the locations and use on research vessels, generally speaking, should not be considered “hazardous”, other than the normal rigors of being at sea.

The standard van “box” described herein is considered to be generic and may be outfitted in a variety of configurations depending on the particular need. Separate Outfitting Specifications and suggested arrangements for each type of van shall be included as attachments to this specification. See **TABLE 1** for summary of van types and associated requirements.

Size:

The standard 20-foot ISO shipping container is considered the preferred configuration for portable scientific vans in the UNOLS fleet. The dimensions for 20-foot containers are given in the chart below. All details given in this specification are for the 20-foot van.

It is recognized that smaller, larger, or custom sized vans may also be needed in certain instances. These may be built as long as the dimensions shown below are provided by the owner. Though a standard 10-foot container may no longer be available, this may be a very convenient size for some applications and the dimensions are included for information.

Note: The standard 20-foot container shall be used whenever possible to allow the standardization benefits listed above and facilitate economical transport by common carrier.

	20-foot	10-foot	Custom
L1	19'-10.5"	9'-9.75"	Variable
L2	19'-2.5"	9'-1.75"	L1 - 8"
W1	8'-0"	8'-0"	8'-0" (or less)
W2	7'-5"	7'-5"	W1 - 7"
H	8'-6"	8'-6"	8'-6" (or less)

Weight:

Gross Weight: The 20-foot van shall be designed for a maximum gross weight of at least **25,000 lbs.** The empty, or “tare” weight, should be kept to a minimum to allow for outfitting and a maximum scientific payload.

Note: A standard 20-foot ISO shipping container is rated for a gross weight of approximately 60,000 lbs.

Tare Weight: For the purposes of outfitting, the “tare weight” shall be considered to be the equipment and materials given in this specification. All additional items added to outfit the van for its intended purpose (See Outfitting Specification), and equipment added by the scientific party for a particular project, shall be considered “payload”.

Once completed, the van “box” (less outfitting items) shall be weighed to determine the tare weight. Both gross weight and tare weight shall be clearly indicated. (See **Placards and Labeling**).

Note: The owner of the van (e.g. vessel operator or Principle Investigator) shall be responsible for determining the weight of the van after outfitting and loading for stability calculation purposes, and to ensure that the van does not exceed the maximum allowable gross weight.

Inspections and Certifications:

US Coast Guard: Once outfitted for its intended purpose, the van shall be USCG inspected as required in **TABLE 1**. The van shall be fitted with an inspection plate (See **Placards and Labeling** below).

*Note: Only accommodations, power and machinery, and chemical storage vans are required to be USCG inspected. Lab vans are NOT considered to be accommodations (See **TABLE 1**). Since these vans may be used on both inspected and uninspected UNOLS vessels, and may be outfitted in a variety of configurations, the structural and fire rating requirements described herein make basic van “box” capable of being USCG inspected by submitting for formal plan approval if needed.*

American Bureau of Shipping (ABS): If the van is constructed by modifying a standard ISO container, once completed the van shall be re-certified and fitted with an ABS approved “CSC Plate” (Convention for Safe Containers) and/or “Customs Approval Plate”.

“TOP LOAD” ONLY: If not fitted with an original CSC and Customs Approval Plate, or if the vendor’s design is not certified by ABS, the van may, as an alternative, be specified as “Top Load Only” and shall be properly labeled to this effect. (See *Placards and Labeling*).

Note: Since the containers are structurally altered from their original condition to construct these vans, the “CSC Plate” and “Customs Approval Plate” will have to be re-certified for the van to be carried as containerized cargo. These certifications guarantee structural suitability so that (among other things) a certain number of other containers may be stacked on top of them. Custom built vans (such as aluminum) will not normally have these original certification, and the cost for acquiring such a certification can be prohibitive. A second and more cost effective option is to specify that the vans be carried as “TOP LOAD ONLY”. Top loading will ensure that other containers are not stacked on top of them, however, there will be an increase in the shipping cost. They can also be shipped via Roll-ON/Roll-Off ship (R/O-R/O) on a standard container trailer chassis.

Construction:

The details of construction must be adequate to withstand the rolling and pitching of a ship at sea, vibration, lifting with a crane by the ISO corners, and transport via commercial carrier as containerized cargo. “Carried as containerized cargo” implies that it may can be carried with other containers, and be secured by conventional container securing hardware. **The vans shall have ISO corners all around.**

Scientific vans are portable and not structurally integral to the ship. This specification establishes the following requirements to ensure personnel are adequately protected.

Panel Stiffness: For vans “normally occupied by personnel” (See **TABLE 1**), the panel stiffness shall be designed to meet the pressures described in **ABS High Speed Rules, Side and Aft Bulkheads (2.0 psi for plate, 1.5 psi for stiffeners)**. A standard steel, 20-foot ISO container DOES NOT meet this requirement on its own, and additional stiffening is required. See DETAILS A and B for steel and aluminum side panel details.

Note: Vans built to this standard must also be carried in a “Sheltered Location” per the US Coast Guard definition negotiated with UNOLS.

Fire Rating: The van shall have a fire rating as described in **TABLE 1**. Vans “normally occupied by personnel” should be constructed of non-flammable material all around to help control the spread of fire and protect personnel. Vans which are NOT normally occupied by personnel may be constructed of “other substantial material suitable for a marine environment” per 46CFR 195.11-10(b).

*Note: Other than as described in **TABLE 1**, portable vans aboard research vessels are not required to have a specific fire rating on their own. The maximum fire rating aboard*

Sub-Chapter U vessels is “A-30” which is for boundary bulkheads between accommodations and laboratories greater than 500 square feet. US Coast Guard has determined that the entire “van/ship system” may be considered in determining the overall rating of the boundary.

The aluminum “van/ship system” (DETAIL A) has been flame tested to an “A-30” rating in order for the aluminum standardized van to be placed anywhere on board without regard to the van type or adjoining compartment. The aluminum configuration was considered to be a worst case, and a similarly insulated steel van should easily meet this requirement as well. The stiffened ISO container (DETAIL B with no insulation) has been tested to “A-0” requirements and is suitable for vans which require that rating.

Deck Loading: The interior deck structure shall be designed and built to support a minimum van payload of 20,000 pounds evenly distributed (125 lbs./sqft).

Top Panel Loading: The top panel of the van shall be stiffened to support a load of 8,000 pounds evenly distributed (50 lbs/sqft).

Recessing:

Even if not specifically stated in this specification, all appendages to the van shall be recessed or removable such that no part extends beyond the sides, top, ends, or bottom of the van to facilitate transport by common carrier.

Materials:

The materials used in constructing the “box” itself depend on the final purpose of the van (See **TABLE 1**). All materials used in both construction and outfitting must be of commercial grade, suitable for the marine environment, and meet applicable USCG and ABS standards. Particular attention shall be taken to bulkhead sheathing, decking material, and insulation. All fasteners (bolts, screws, etc.) used shall be marine-grade stainless steel.

Note: If weight is not an issue, the van may be constructed of steel. Aluminum or other lightweight materials should be used when weight (or maintenance) considerations are important to a particular operation or project.

Steel Option: If constructed of steel, a standard 20-foot shipping container may be modified to meet the requirements in **TABLE 1**. The shipping container used shall have a steel deck, or have a steel deck inserted in lieu of the standard wooden deck. If the standard wooden deck is retained, a minimum 14 gauge steel “belly plate” must be added (10 gauge is recommended per **DETAIL C**), and the wooden deck treated on both sides with a fire retardant coating. A steel van may be constructed new if it generally follows the standard 20-foot container design.

“Lightweight” Option: If constructed of aluminum, only marine grade alloys such as 5086 plate and 6061 structural framing sections shall be used, and the design shall be such that it meets (or exceeds) the construction requirements given herein. Also, it shall be ALL aluminum with welded seams, as opposed to aluminum fastened to steel framing by mechanical means to prevent corrosion from the contact of dissimilar metals in the marine environment. Other materials may be considered for the “light weight” option as long as they meet the construction requirements given in this Specification, including **TABLE 1**.

Note: Aluminum is a suitable, nonflammable material for laboratory van construction per TABLE 1. However, the standard aluminum panel design shown in DETAIL A DOES NOT meet A-0 requirements on its own, and thus cannot be used for several of the van types given in TABLE 1.

Arrangement:

Precise door locations and the arrangement type used (“Stand-alone” or “Mating/AGOR”) shall be called out in the Outfitting Specification.

Note: Three (3) means of escape built into the design helps ensure that at least two (2) can always be kept completely clear no matter which ship the van is embarked on. The exact locations of the doors should best suit the vessel the van is normally carried on.

Stand-alone Arrangement: Vans which are likely to be used on a variety of vessels shall normally be fitted with two personnel doors, an escape hatch, and large cargo doors. One of the personnel doors should be located generally on the forward end of the van (Side “F”), and the other door located on the opposite end (Side “A”), or sides of the van. See “General Arrangement” Drawing, Sheet 2 of 5.

Mating/AGOR Arrangement: Vans which are normally carried on ships where the van mates directly to the deck house (as on the AGOR vessels) will require more specific door locations, a smooth forward face (Side “F”), and specific positioning of service connections. See “AGOR-General Arrangement” Drawing, Sheet 3 of 5. In this arrangement the large cargo doors are eliminated. The aft personnel door shall be as large as practicable (preferably 36” or greater) to facilitate the loading of equipment.

Doors and Hatches:

Except for vans requiring an external “A” fire boundary (See TABLE 1), the doors, hatches, and portlights shall be aluminum. If fitted to a steel van, they shall be bolted in place and fitted with an adequate gasket which mechanically isolates the two materials (to prevent corrosion by dissimilar metals), as well as forms a watertight seal.

Personnel Doors: The personnel doors and escape hatch shall be marine grade (FREEMAN Brand, 1100 Series, or Owner approved equivalent). By “equivalent” it is meant that they are rated “weathertight”, fitted with at least 3 dogs, and both the dogs and handle can be fully operated from both sides. The personnel doors shall be at least

28" wide (clear opening), with a height as large as practicable, and open outward if possible. The door shall be thermally insulated. They shall be fitted with a marine grade door handle and either a hasp, a double pad eye for a padlock, or lock set integral to the door handle. The doors shall also be fitted with a means of securing them in an open position while at sea, and a pneumatic closure mechanism to prevent the door from slamming shut due to ship's motion. The doors shall be recessed such that no hardware from the door protrudes beyond the side of the van.

Note: If a padlock is used, it may secure the van during transport or while alongside, but should be removed by the operator or owner while the van is at sea.

Escape Hatch: The emergency escape hatch shall be FREEMAN Brand, 2400 Series or Owner approved equivalent, and have a minimum 20" x 20" clear opening. By "equivalent" it is meant that they are rated "watertight", fitted with at least 4 dogs, and all dogs can be fully operated from both sides. The dogs may be operated from the outside themselves, or by means of a deck "wrench" ("T" handle). If a deck wrench is used, a bracket for stowage shall be located in the corner recess and the wrench's intended use shall be clearly label with an engraved placard. The hatch shall be located between the rows of mounting channel in the overhead. A ladder, or adequate means of egress, shall be installed both on the inside and outside to facilitate escape. The internal ladder shall be able to be stowed such that it is out of the way, but readily available and clearly marked for use. The external ladder shall be recessed into the side of the van.

Cargo Hatch: The aft end of the van shall be fitted with a large cargo hatch having the largest practicable clear opening. The hatch shall be fitted with hinged double doors, fitted with a locking mechanism or internal dogs sufficient in number to rate it "weather-tight". The lower edge of the hatch opening shall be flush (or nearly flush) with the finished deck of the van to facilitate loading of large equipment by forklift or dolly. The cargo doors, and inserted personnel door (if installed) shall be recessed such that no hardware from the door or cable pass protrudes beyond the side of the van.

If one of the personnel doors is inserted in the large double doors of a modified 20-foot container, the structure of the door shall be reinforced appropriately to support the door, or the entire door shall be fabricated new, whichever is deemed cost effective.

Note: The standard cargo doors on an ISO container can not be considered an adequate "means of escape" since the dogging mechanism can not be operated from the inside. Thus proper personnel doors and escape hatches (described above) are required.

Interior Preparation and Finish:

If the van is constructed of steel, all of the interior steel surfaces shall be properly prepared and coated with a marine-grade paint system (epoxy or other) before application of insulation, sheathing, or decking.

The interior finish of the van, including bulkhead/overhead sheathing and decking, shall be according to the appropriate Outfitting Specification.

Mounting Channel:

All vans shall utilize mounting channel (Uni-strut, Kindorf, or equivalent) to secure outfitting and scientific equipment in the van per Options 009 and 010 below. The recommended size is 1-5/8" x 1-5/8" mounting channel for optimal utility, but thinner sections may be used to maximize internal space in the van if desired.

Insulation:

The vans are intended to be used in both cold climates (0 degrees Fahrenheit) and tropical climates (100 degrees Fahrenheit). For vans "normally occupied by personnel", all exterior surfaces shall be insulated with an **incombustible material suitable for marine use, such as rock wool**. Insulation thickness shall fully fill the voids and suite the structural configurations shown in DETAILS A and B. Normally the 1.5"-2" of rock wool is sufficient to provide adequate thermal insulation for the climates described above, without sacrificing internal space. Additional insulation or boundary layers may be added for more severe climates, or for vans of a special purpose (such as cold laboratory vans). Special insulating requirements shall be called out in the appropriate Outfitting Specification. **Insulation other than rockwool may be considered for these specialized van types, though careful consideration should be given to flammability.**

Note: Rockwool insulation is required per DETAILS A and B in order for vans to meet the A-30 van/ship system requirement, and thus be placed anywhere on board.

Exterior Finish:

Unless otherwise specified by the Owner, the color of the van shall be white. White, other light colors, or special paint additives, are preferable because of their ability to reflect heat in the climates described above.

The paint system used shall be marine grade and applied according to paint manufacturer's recommendations. The surfaces shall be adequately prepared before application of primer. The exterior shall be coated with a marine-grade primer (epoxy or other) suitable for the material used. The finished top coat(s) shall be semi-gloss and easily cleaned.

Wire Passes/Vents:

Vans which are "normally occupied by personnel" shall have at least one (1) 4-6" DIA wire pass for connection of general alarm, ship's internal phone system or public address system, data and/or scientific cables, and ship's fire detection system (if available). The details, number, and precise location of the wire passes/vents will be called out in the Outfitting Specification, but shall be as described in Option 008.

Note: It is recommended that laboratory vans have 5 – 6 such penetrations for use with fume hoods, fresh make-up air, and for the routing of various scientific systems.

Electrical:

All wiring shall be in accordance with “Subchapter J” of 46 CFR (Parts 110-113), “Shipboard Wiring Requirements”, IEEE Standard 45-1998, “IEEE Recommended Practice for Electric Installations on Shipboard” and applicable SOLAS requirements (Chapter II-1, Part D , SOLAS Consolidated Edition, 1997)

Shipboard wiring methods shall be used for all cables. Cables should be surface mounted and routed in between, over, or under the mounting channel. All fixtures, boxes, and devices must be corrosion resistant and intended for marine/commercial use. Major equipment, such as the HVAC unit or water heater, should be on separate circuits. Several “spare” circuits shall be provided in the distribution panel. All electrical components must be located at least 18” above the deck of the van.

The van shall be specified with either:

- **3-phase** power supply and distribution which will operate either from a “460” Vac, ungrounded ship’s system or 208/115 Vac, grounded neutral, system. “230” Vac may also be selected as the input voltage if desired by the owner.
- or
- **Single-phase** power supply and distribution which will operate from 460, 240 or 208 Vac, ungrounded ship’s systems and either 240 Vac or 208/115 Vac, grounded neutral, systems.
- The van shall be fitted with two (2) power supply plugs: one for ungrounded shipboard systems and the other for grounded neutral systems, which will generally be shore based.

Note 1: The most common electrical service available on ships in the UNOLS, NOAA, USCG, and international research vessel fleet is 460 Volt (V), 3-phase (ϕ) power. US ships will run at 60 Hertz (Hz) while some foreign vessels can be expected to operate at 50 Hz. 3-phase supply and distribution systems should be considered for vans with high power requirements such as air compressors or refrigeration systems. Single-phase power supply and distribution should be adequate for general purpose lab, berthing, and storage vans. If a ship with 3-phase van supply power is using a single-phase van, then the electrical load will only be on 2 of the 3 legs. A 460 V, 20 Ampere or 240 (208) V, 40 A service should be adequate for most vans.

Note 2: “460” Vac can vary from 440 volts to 480 Volts depending on the ship. “240/120” Vac supplies are single-phase supplies found in residential and light commercial buildings. 208/115 Vac systems are 3-phase systems found in commercial/industrial buildings and some ships (generally ungrounded). The single phase van specified in this document will provide 240/120 Vac when connected on shipboard (regardless of the supply voltage), but may provide either 240/120 Vac or 208/115 Vac when connected ashore depending on the supply voltage. The distribution side of the van supply systems have a grounded neutral which requires isolation

transformers for shipboard use and must be connected to the grounded neutral to comply with the National Electric Code when the van is ashore.

Distribution Panel (Single-phase van): The interior distribution in the single-phase van will be 240/120 Vac with the neutral grounded to the van structure at the main circuit breaker. This service is generally found in shore-based residences and small commercial buildings allowing readily available equipment (e.g., HVAC units) to be installed in the van and will allow the van to be connected to shore-side services when not on the ship. The van shall include a step-down/isolation transformer of a suitable rating to isolate and convert the ship's 460, 240 or 208 V to the 240/120 V for the interior.

Distribution Panel (3-phase van):The interior distribution in the 3-phase van will be 208/115 Vac with the neutral grounded to the van structure at the main circuit breaker. This service is generally found in shore-based commercial and light industrial buildings, again, allowing readily available equipment (e.g. HVAC units) to be installed in the van and will allow the van to be connected to shore-side services when not on the ship. The van shall include a step-down/isolation transformer of a suitable rating to isolate and convert the ship's 460V (or 230V if chosen by the owner) to the 208/115 V for the interior.

The primary side of the transformer(s) will be ungrounded. The secondary (240 or 208/115V) side(s) of the transformer(s) shall have a grounded neutral. All structural metal parts of the van, all electrical panels and enclosures, any metal plumbing lines, the HVAC unit, and the uni-strut, will be bonded together and to the electrical system neutral.

The van shall be fitted with the male end ("inlet") of the power plugs specified for ship and shore power. The inlets shall be located in the recessed corner of the van as shown in the General Arrangement Drawings. 50-foot power cables shall be provided. The cable shall be 3 or 4 conductor as required (2 or 3 current carrying plus a ground0 SOWA or equivalent rubber covered cable), sized to match the electrical service, and fitted with a female connector to mate with the van inlet. The other end of the cable shall be left unterminated so that the vessel operating institution can match the cable to the existing ship's power feed plug.

The van shall be fitted with four (4), 4-foot, white, fluorescent light fixtures, and two (2), 2-foot, red fluorescent light fixtures secured to the mounting channel in the overhead. The red and white lights shall be on separate switches. A total of eight (8), 20 Amp receptacles shall be placed on the long sides of the van (4 per side), at 48" above the deck, in between the uni-strut. All receptacles are to be on separate GFI circuit breakers, or alternatively, GFI receptacles may be used in all locations.

HVAC:

As a minimum, vans normally occupied by personnel shall be fitted with a self-contained, air cooled, HVAC (Heating, Ventilating, and Air Conditioning) unit. The unit shall be sized to provide enough cooling capacity to maintain an internal temperature of 70 degree Fahrenheit with a maximum outside temperature of 100 degrees F, a fume hood in operation (120 LFM and 320 CFM), and two people working inside. The unit would preferably be fitted with a thermostat. It shall be capable of providing external ventilation for fume hood supply air, and operate from the 240/208VAC service. The exterior coils of the unit shall be resistant to corrosion in the marine environment. The unit shall be located in the recessed corner of the van as shown in the “General Arrangement” Drawings.

The recessed area must be sized such that the unit can be easily removed for maintenance, and allow no portion of the unit to extend beyond the sides or top of the van. The unit shall be adequately supported by the van structure to withstand transport, loading, and the rigors of sea. If a “window-style” unit is used, the opening in the van side shall be over-sized by at least 1” on the sides and top to accommodate a different make/model HVAC unit in the future. The gap between the HVAC and the van shall be covered by removable metal trim on the inside of the van.

Greater (or less) heating, cooling, or ventilation capacity may be required due to the van’s special purpose, or the environment in which it will be used. These requirements, and/or particular equipment make and model, shall be called out in the Outfitting Specification.

Plumbing Services:

The plumbing services shall be located in the recessed corner of the van. They shall be positioned as low as practicable to allow proper drainage of the plumbing fixtures.

The area shall be sized to accommodate the threaded couplings listed below and allow hoses to be easily connected. It shall consist of a bolted cover plate and gasket on an angle coaming as shown in DETAIL F to facilitate maintenance and modifications. The plate and couplings shall be stainless steel. All of the penetrations shall be fitted with shut-off valves on the inside of the van. For “A”-rated vans the valves shall be constructed of metal (stainless steel, bronze, etc.) All penetrations shall be fitted with plastic cam-and-groove fittings on the outside of the van.

Fittings:

Drain	2 Each	1-1/2” DIA
Supply	4 Each	3/4” DIA

If plumbing services are to be omitted or modified, it shall be called out in the Outfitting Specification.

Placards and Labeling:

The placards and labeling described below are for ALL vans. Additional placards and labeling required for the van’s intended purpose will be called out in the Outfitting Specification.

- 1. All electrical devices and services, safety equipment, escape hatches, etc. shall be properly labeled with engraved-type placards, decal of a durable material, or stenciling. All receptacles shall be labeled to the corresponding breaker in the distribution panel.
- 2. Builder’s Plate: All vans shall be fitted with an engraved placard on the interior of the van giving the following information:

“Owner: ”(*UNOLS operating institution or other*)
 “Van Type:” (*UNOLS Category*)
 “Serial Number:” *XXX*
 “Date of Construction:” *XX/XX/XX*
 “Constructed By:” (*Vendor Name*)

- 3. USCG Inspection Plate: All vans which are required to be USCG inspected shall also have a stamped **steel** placard permanently attached in a convenient location. The Coast Guard propeller stamp is to be embedded on the steel placard signifying compliance with the approved plans. The placard shall also include the following information:

Module Serial Number: _____
Approval subject to the comments of OCMI _____ approval letter dated _____.
For use on (type of vessel): _____
Approved for installation in a (protected, partially protected or exposed) location.
Structural fire protection boundary: _____
Gross Weight of module (van): _____

- 3. Purpose and Weights Plate: All vans shall be fitted with an engraved placard on the exterior of the van giving the following information:

PORTABLE SCIENTIFIC VAN
 FOR USE ON RESEARCH VESSELS ONLY

 MAXIMUM GROSS WEIGHT = 25,000 LBS
 TARE WEIGHT = X,XXX

TOP LOAD ONLY

Note: If an ISO container is used, the Maximum Gross Weight called out in the CSC plate shall be substituted for the 25,000 lbs. The words “TOP LOAD ONLY” shall be shown only on custom built vans which are not fitted with a CSC Plate.

4. Plumbing Services (DETAIL F): Once outfitted, the purpose of each penetration on the plumbing panel shall be properly labeled with an engraved placard on the outside of the van. Penetrations which are not used shall be labeled “Spare”.
5. Top Panel Loading: A placard indicating the top panel loading capacity (normally 8000lbs) shall be posted on the side of the van.

Securing and Lifting Hardware Options:

The van shall be fitted with fork-lift pockets at the bottom, as on a standard 20-foot ISO shipping container: The slots are approximately 14” wide, 4-1/2” high, and spaced 81” apart (center to center).

*Note: The van may be secured to the vessel in a variety of ways depending on exact location desired and the arrangement and details of the vessel utilized. Refer to **TABLE 2** for recommended securing options. All securing hardware is to be provided by the vessel operator. **TABLE 2** lists certain hardware and methods of securing for guidance purposes only. Responsibility for properly securing the van lies with the Master of the vessel.*

The van may be lifted aboard by a variety of means depending on the facilities available aboard the ship and/or ashore. See “LIFTING OPTINS” Drawings, Sheets 1-4. The responsibility for the method selected, and adequacy of the hardware used, is the responsibility of the Master of the vessel.

Deviation from the Specification:

Portions or specific details given in this document may be omitted for economy or because of a van’s particular purpose. However, it is strongly recommended that parties having a scientific van built adhere to these standards as closely as possible to ensure that it can be carried on UNOLS vessels.

The “Options” section at the end of this specification show items that may be desirable for some applications, but are not required. Other deviations may be noted as part of the Outfitting Specification.

OPTIONS LIST
UNOLS Standardized Van

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- Option #001:** Hand Rail Sockets: If personnel intend to utilize the top of the van, the top perimeter shall be fitted with recessed sockets, approximately 4" deep, to accept 1-1/2" DIA pipe rails, spaced no greater than 60" O/C. The design shall be such that they are "free draining", allowing no debris or water to accumulate (See DETAIL G).
- Option #002:** Lifting Hardware: The van shall be provided with lifting hardware per "LIFTING OPTION" Drawings (*Describe and specify sheet number*). If spreader bar is custom fabricated per Sheet 3, it shall be load tested to 125% of Maximum Gross Weight rating before delivery.
- Option #003:** Recess Cover: The open portion of the recess not accommodating the ladder of shall be fitted with a full height, hinged door constructed of the same material as the van and coated similarly. The hinges shall be corrosion resistant and easily lubricated. The door shall be fitted with a means of securing it securely shut in a seaway.
- Note: If it is desired to close off the opening containing the ladder, this may be done by bolting a plate to the ladder rungs. All vans should be fitted with the aluminum flat bar flanges shown in the General Arrangement Drawings, so that blanking plates can be easily added by the Owner at a later date.*
- Option #004:** Recess Louvers: The open sides of the recess shall be fitted with hinged louvered doors, sufficient to allow the flow of air, but designed such that salt spray is deflected. They shall be constructed of the same material as the van and coated similarly. The hinges shall be corrosion resistant and easily lubricated. The doors shall be fitted with a means to keep them secured shut in a seaway.
- Option #005:** Door Window: The door(s) shall be fitted with a fixed, marine grade, window/portlight. The window/portlight shall be fitted externally with a removable deadlight or closure to protect it during transport by common carrier. The deadlight shall be at least 3/16" thick if aluminum, and 1/8" thick if steel. It shall be secured in place by 1/4" DIA (minimum) stainless steel fasteners.

Option #006: Window/Portlight: The van shall be fitted with (x) (*number and location to be specified*) marine-grade window/portlight (FREEMAN Brand Series 4000 or Owner approved equivalent) each being approximately 11" x 22". By "equivalent" it is meant that they have corrosion resistant frames and tempered glass. The window/portlight shall be fitted with a removable (or hinged) deadlight or closure to protect it during transport by common carrier. The deadlight shall be at least 3/16" thick if aluminum, and 1/8" thick if steel. It shall be secured in place by 1/4" DIA (minimum) stainless steel fasteners.

Option #007: Deck Drain: The deck inside shall have (x) (*number and location to be specified*) 1-1/2" DIA drains. The drains shall be fitted with removable plugs to prevent spillage on deck, and fitted externally with a cam-and-groove type fitting for installation of a drain hose.

Option #008: Wire Passes/Vents: Wire passes shall be installed according to either DETAIL D or DETAIL E (*Specify*). They shall be located halfway between the rows of mounting channel on the bulkheads, and as near the top of the van as practicable per the arrangement drawings.

These penetrations may be used for either cable passes, exhaust vents, or air supplies. They shall be able to accept either a removable cowling, gooseneck, or closure (See DETAIL E). The closure (cover plate, plug, etc.) shall be used during transport or when the penetration is not in use. The penetration shall be such that an exhaust outlet of internal equipment such as fume hoods can be easily attached (or removed) by bolting flange, threaded connection, or clamps.

All removable wire pass closures shall be mechanically fastened to the wire pass by a strong link or hinged strap to prevent misplacement. The plugs or caps should be installed such that they can be inserted with the strap in place. Alternatively, the closures may have a dedicated storage rack or holder inside the van to prevent misplacement. The holder shall be secured to the mounting channel in a convenient location, and designed such that it securely holds all cover plates and cowlings when not in use

Note: DETAIL D should be used only where economy is important. DETAIL E shall be used on laboratory vans for maximum utility. These penetrations shall be installed as high as practicable in the side corners of the van, and the two ends as shown in the "General Arrangement" Drawing.

Option #009: Bulkhead Mounting Channel: The interior of the van shall be fitted with corrosion resistant mounting channel (Uni-strut, Kindorf, or equivalent) all around for securing equipment and furnishings. It shall be fitted on all four bulkheads (including large cargo doors), and the overhead. The channel shall be surface mounted at approximately 22" O/C, and orientated vertically on the bulkheads. They shall be mechanically fastened directly to the bulkhead and overhead structure (See DETAILS A & B), by 1/4" DIA (min), corrosion resistant fasteners, 12" O/C along their entire length. The channel shall be continuous in length, and extend from 6" above the deck to 6" below the overhead.

Option #010: Deck Mounting Channel: The deck shall have corrosion resistant mounting channel (Uni-strut, Kindorf, or equivalent) approximately 22" O/C and aligned with the mounting channel on sides "P" and "S". They shall be recessed such that the finished deck is flush (or nearly flush) with the top of the mounting channel. They shall be mechanically fastened to the deck structure (See DETAIL C), by 1/4" DIA (min), corrosion resistant fasteners, 12" O/C along their entire length. The deck mounting channel shall be fitted with a removable cover to prevent the accumulation of debris.