DISPLAY CASE SPECIFICATIONS FOR PERMANENT GALLERY EXHIBITIONS AT THE METROPOLITAN MUSEUM OF ART

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Summary

I. This specification includes, but is not limited to, describing The Met's requirements for the proposal and execution of the design, construction, timing and testing of materials, material selection, prototype generation and review, lighting, electrical, security alarms, pest and insect prevention, as well as the delivery and installation of display cases to be used in permanent galleries.
II. These specifications are relevant to both free-standing or wall-mounted, glass or acrylic, display cases.

General comments

I. There are two primary measures and requirements that define the performance of a display case
    1. Functional performance – engineering design and security
    2. Conservation performance – cleanability, dust control, lighting, airtightness, and approved construction material selection
II. These criteria are defined within this specification, the design documents, and any additional specifications.
III. *Sections marked with an asterisk (*) and italicized have timeline requirements affiliated with completing the project on schedule and therefore require special attention from the case manufacturer*.

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Part 1. Requirements during the design phase

1.01 Submittals

A. Shop drawings shall be prepared by the display case manufacturer and must:
    1. Show dimensioned plans, elevations, profiles, and full- or large-scale details.
    2. Identify details and key them to elevations.
    3. Show relation to the adjoining construction, including but not limited to provisions for fitting and trimming work to accommodate allowable tolerances in adjoining construction.
    4. Identify any structural support furnished and installed, for all case types.
    5. Show construction of all parts of the work: materials, thicknesses, finishes, joining methods, and details of field connections and anchorage.
    6. Specify requirements for in-wall presets or blocking as required to support the installation of the display cases.
    7. Identify hardware or accessories necessary to install and level free-standing or wall-mounted display cases.
    8. Show other information necessary to establish conformance to specified requirements and to fabricate, install, and coordinate work with affected trades.
    9. Identify the manufacturer, distributor, and brand name of all the products that will be used to construct and anchor the case.
        i. Further, identify the location of those products.
        ii. A legend may be used to identify the products, and the drawings may be annotated with the legend's identifiers such that each component of the case is labelled with the specific product being used to construct that portion of the case.
    10. Identify the outermost edges of the art envelope, the self-contained compartment inside the case that is separate from the supporting case work, for each case type with a closed loop line.
    11. Identify details and dimensions that result from field conditions and indicate on shop drawings all required field measurements.
    12. Provide access to electrical junction boxes, security alarms, and lighting controls. Coordinate with other trades and indicate locations and means of access on shop drawings.
    13. Ensure any electrical wiring does not go inside the art envelope. Wiring can be enclosed in sealed metal tubing if it is required in the art envelope. All wiring paths must be indicated in case drawings.
    14. Tolerances for permissible deviations for adjacent panels such as kick plates, access panels, decks, backboards, and other features that require parallel or perpendicular alignment must be indicated on shop drawings.
        i. Minimum tolerances are listed in sections 2.01-4 (panels) and 2.02-6 (glass).

B. Mock-ups, product data, materials for testing

*I. *Mock-ups*
    1. The case manufacturer must submit mock-ups of all visible components as part of the development of the detailed design process in accordance with the design intent and coordinated with adjacent work for review and acceptance by The Met.
        i. Samples and mock-ups are to be approved for use by The Met before starting any construction, including the pre-production prototypes (see section C, following).

2. Mock-ups must incorporate all materials, finishes, and profiles, as applicable to demonstrate the three-dimensional relationships and what will be achieved in the completed work.
    i. Mock-ups approved by The Met are to be set aside for record/comparison purposes at The Met and are not to be used to produce any casework.

II. Material Data
1. The case manufacturer must submit printed copies of descriptive information for every non-metal or glass material used in the mock-up.
    i. Descriptive information includes: make, model, technical specifications, safety data sheets (SDS), and catalog cuts.
    ii. Non-metal materials include but are not limited to: adhesives, sealants, caulks, glass, acrylic sheet, paints, fabrics, gaskets, tubing, fittings, coatings, and wiring.
    iii. This information will be kept by The Met and checked against the final cases at the time of delivery.

*III. *Materials for testing*:
1. Any material used within the art envelope must be as close to inert as possible.
2. All surfaces must be smooth to allow dusting via wiping with microfiber cloths without catching or tearing of the cloth.
3. All surfaces must be easily maintained and used without scratching.
4. Samples of all non-glass or ceramic materials with patinas, coatings, or surface finishes that are visible to the public must be produced and delivered to The Met for testing *within 60 days of contract reward.*
5. The Met must approve any material utilized within the art envelope. Approval is made by chemical testing of materials followed by a review of the results with the science, conservation, and curatorial departments.
    i. The case manufacturer must submit for chemical testing individual, physical samples, in a quantity no less than 12g, of each product proposed for use within the art envelope of the display case.
    ii. Samples of all non-glass, metal, or ceramic materials must be produced and delivered to The Met for testing *within 60 days of contract reward.* Examples include coated or surface modified metals, glues, adhesives, caulks, sealants, powder coats, paints, gaskets, boards, coated wires, tubes, and plastics.
    iii. At least four 8.5in. x 11in. (or A4) samples are required for each proposed coating or modified surface.
        A. Powder coatings must be supplied on aluminum foil.
        B. Oven cured paints for glass must be supplied on glass sheet.
        C. All room temperature cured materials must be supplied in their uncured, raw state for preparation by the Met.
    iv. The Met also requires that the case manufacturer deliver up to two viable alternatives to the proposed material for use.
    v. The Met's scientific research and conservation departments are available for consultation during the process of selecting primary and alternate materials.
6. Communicate directly with the project manager from The Met to coordinate the production and delivery of all materials.
    i. *All samples must be delivered to The Met within 60 days of contract reward.*
    ii. All materials must be clearly labelled with the make, model, production date, lot number, and any modifications or preparations that were used to prepare the sample. Ship samples in a polyethylene Ziploc-style bag.

iii. For materials that are purchased and used "as-is" (i.e., do not require curing or drying), including but not limited to boards, gaskets, single- and double-sided adhesives, magnets, joint adhesives, and fabrics, samples must be recently obtained from suppliers and delivered from the supplier's warehouse. See above III.5.ii for labelling instructions and III.5.i for deadlines.
iv. Materials that require curing or drying, include, but are not limited to: caulks, paints, adhesives for glass-to-glass or glass-to-metal joins, gels, primers, coatings, and fillers. Contact The Met to discuss how to prepare samples for assessment.
v. Incorrectly labeled samples, ambiguously prepared, non-Ziploc-style bagged, or otherwise incorrectly delivered materials may be rejected by The Met, causing production delays.
vi. Testing by The Met is completed in batches and requires between two and six months to complete depending on the number of materials submitted.
vii. If all submitted materials meant to perform a particular function are not approved for use by The Met, alternate materials must be submitted within 3 weeks of notification of the need for alternatives.

C. Prototypes
1. The case manufacturer must develop pre-production prototypes.
i. ***Construction of the prototypes must commence once the design development, materials, and project have been approved for construction by The Met.***
ii. The manufacturer is to prepare at least one fully functioning pre-production prototype, for <u>each</u> case type<u>,</u> as early as possible (i.e., if there are five case types, five prototypes must be made).
iii. The timing and selection of which case(s) are to be prototyped must be integrated with the construction schedule and approved by The Met's project manager.
2. The prototype(s) must be reviewed by and approved for use by each of the following Met departments: construction, curatorial collections management, curatorial, design, conservation, and science.
i. External design team(s) may also need to approve the prototypes.
3. The pre-production prototypes enable The Met's team to ensure that all aspects of the display cases function in accordance with the performance requirements and aesthetic design intent.
i. For any case with interior lighting or heat-generating modules secured beneath the case, the case manufacturer must provide temperature data showing that over the course of one week of monitoring, the temperature at the bottom, middle, and top of the art envelope does not change more than 1.5°F relative to the gallery's temperature, which is to be measured approximately 1 m (3.2 ft.) from the vitrine.
4. Pre-production prototypes are to incorporate all materials and components agreed upon after review of initial mockups and final prototype shop drawings.
i. Materials and components include back-painted glass, sealants, opening mechanisms, locks, etc.
ii. Also include all fixtures and services installations such as lighting, ventilation, security installations, silica gel compartments, and environmental sampling ports.
iii. All pre-production prototypes are to be produced using the same methods and techniques that will be used to make the final products.

5. Pre-production prototypes will be reviewed at the manufacturer's facility by at least one member of The Met's construction, curatorial collections management, curatorial, design, conservation, and science departments.
6. ** Components of pre-production prototypes may be incorporated into the final production of the display case if a discussion and an approval is expressly made by The Met. This approval must be written and signed.*

Part 2. Products to be used in the design and construction of casework

2.01 Display case structure

1. Case structure to be made of stainless steel, aluminum, and/or powder-coated carbon steel with welded or mechanically fixed connections.
    i. Gauge, weight, profile, and fixing technology to be engineered as required by the case manufacturer for size and use shown.
    ii. The display case manufacturer is free to propose alternate materials for case structure provided that the alternate and its advantages are clearly detailed in words and drawings within the case manufacturer's proposal.
2. Cases must be rigid, strong, and stable enough to withstand daily use over a minimum 25-year lifespan.
    i. Case manufacturer must acknowledge this requirement in their offer and make clear how their product complies.
3. Every free-standing display case must be able to withstand a lateral load of 45kg (100lb) applied at 107cm (42in) from the floor level.
    i. Cases that do not meet this threshold must be weighted in order to withstand that load or be bolted to the floor.
    ii. Bolting locations, materials, and methods must be clearly outlined in the drawings including any adhesives, hardware, and/or other materials and mechanisms for securing the cases to ensure the materials and methods are acceptable and do not conflict with existing services.
4. Permissible deviations for panels, subject to achieving the appearance and relationships shown on the drawings:
    i. Length: ± 1.5mm (0.06in)
    ii. Width: ± 1.5mm (0.06in)
    iii. Squareness (taking the longer of two sides at a corner as a baseline and measuring the deviation of the shorter side from the baseline perpendicular): ± 1.5mm in 1m. (0.06in in 39.37in).

2.02 Glass

1. The minimum specifications for glass are extra clear (low iron) laminated float glass that meets all security, deflection, and stability requirements defined herein for all glass utilized in case exteriors and doors.
    i. Glass thicknesses to be engineered by case manufacturer for sizes and use shown and indicated on shop drawings to meet the minimum deflection and stability requirements outlined herein or otherwise required by the project.
    ii. Glass must incorporate a level of protection from forced entry. Impact-resistant glass preferred. Contact the project manager to discuss the level and type of security desired and whether or not coatings must be applied between or on the face of the glass to ensure the safety of the art.
    iii. Light transmission value must be ≥ 91% either before or after any coating is applied unless expressly indicated as a project requirement that lower light transmission values are required
    iv. No permanently etched glass identifications on any panel is permitted.
    v. All edges not covered by frames are to be polished and arised.
2. Anti-reflective glass, where specified or requested as an alternate, is to follow the same constraints as the base specification. The degree of light transmission must be ≥ 98% with a CRI of ≥ 99.

3. ** Glass to be from one manufacturer and the case manufacturer shall specify the glass supplier with the offer. The glass supplier and glass proposed for use must be approved of, in advance and in writing, by The Met*.
4. Glass shelves are to match other glass used in the cases, with all edges and corners beveled and polished.
5. Vertical fixed glass joints to be mitered and arised.
6. Glass tolerances:
    i. Height and width: ± 1mm (0.04in)
    ii. Across the diagonals: ± 1.5mm (0.06in)
    iii. All adjacent glass panels: ± 1mm (0.04in)
    iv. Tolerances must not be cumulative
7. If glass is to be painted, it is to be surface-bonded to the case structure and/or hinge mechanism using a proven system suitable for a 25-year life span and with an assumed daily operation of doors.
8. Cases must provide a high level of physical resistance to any opportunist and pre-meditated attacks.

2.03 Leak rate testing, gasketing, and seals

1. All cases are to be of "airtight" construction. Case leak rate must be 0.13 exchanges/day or better and be guaranteed to perform at this leak rate for at least 5 years.
2. 20% of each case type and every unique/special case must have the "airtightness" tested by the case manufacturer or a Met approved contractor with a designated member of The Met staff present.
    i. *A schedule for leak testing is required within 60 days of completion of case drawings.*
        1. It is critical to discuss the timing of testing with the Met's Scientific Research Department once the drawings for the cases are complete, as leak remediation can be difficult or impossible for some case types once fully installed.
    ii. The carbon dioxide (CO_2) decay method must be used to perform the test.
    iii. The minimum starting concentration of CO_2 in each case is 4500 ppm.
    iv. Data must be recorded automatically using a calibrated data-logging CO_2 detector with a minimum of 1 reading every 10 minutes.
    v. Data must be collected over at least 48 hours per case and calculations for the leak rate made using the following equation:

    $$\textit{Leak rate (k)} = [\ln(C_{start} - C_{room\ average}) - \ln(C_{end} - C_{room\ average})]/t$$

    Where: C_{start} and C_{end} = concentration of CO_2 (ppm) in the vitrine; $C_{room\ average}$ = the average CO_2 concentration in the gallery (ppm); and t = time in days
    vi. If any case is shown to have a leak rate greater than 0.13 exchange/day, 100% of cases of that type will need to be tested by the case manufacturer or Met approved contractor with a designated member of The Met staff present. The case manufacturer is responsible for testing, remediation, and retesting of cases that do not meet the 0.13 exchange/day specification at no cost to the museum.
    vii. ****** *A report providing the raw data and a summary of the leak testing methods used, the leak rates detected, and the identity of the person/company*

performing the test must be supplied by the manufacturer before case furniture is installed.

1. The Met's Scientific Research Department will provide an excel-based template that must be used for reporting the raw data and leak rate calculations. In the template, a plot of the raw data from the time of CO_2 injection showing CO_2 concentration over time, selected start and end times used, number of days measured (calculated from start and end times), average measured ambient CO_2 concentration, and calculation of leak rates are required for each measured case on separate tabs. A summary tab is also required that indicates case name, case type, date of measurement, and calculated leak rate.

3. All door gasketing is to be concealed and not easily accessed by the public when the door is closed.
4. Door gasketing must be capable of retaining its quality of seal over time as the alignment between parts inevitably changes.
5. Structural and functional components that form the art envelope must be sealed from other areas of the case with either a sealant cast in-situ by the manufacture or by use of a compressible gasket.
    c. These locations must be clearly identified in the shop drawings and the material used to seal the art envelope from other areas of the case must be approved in advance by The Met.
6. Glass to glass glued joints will utilize a transparent adhesive sealant, specified by the manufacturer in design drawings.

2.04 Silica gel/activated charcoal compartment

1. The Met requires that the case manufacturer include a silica gel compartment into the design of every free-standing and wall mounted glass or acrylic display case.
    i. The drawer must have a sealable window with replaceable filters. The filters must minimize the introduction of dust and chemicals into the case.
        a. Chemicals include acids, bases, and volatile organic chemicals.
    ii. The leak rate of the case through the filter must be at least 0.2 exchanges/day, though a greater leak rate is preferred.
    iii. The filter system must be replaceable with a solid gasketed plate that meets the leak rate requirements outlined in section 2.03.
    iv. Provisions in case design must be made such that free air flow between the room and filter exists. For niche cases, the case must be constructed to eliminate air exchange between wood and other non-inert wall construction elements and the filter.
2. A perforated shelf or tray raised at least 1.3cm (0.5in) from the compartment's floor must be incorporated into the design to facilitate air flow around the silica gel sachets.
3. The volume of the silica gel compartment must be at least 1.5% of the internal volume case. For example, if the internal dimensions of a case are 3.5m x 3.5m x 3.5m (10ft x 10ft x 10ft) or 28.37m^3 (1000ft^3), the silica gel compartment would measure at least 0.426m^3 (15ft^3).
4. It is essential that the silica gel compartment be accessible without opening the vitrine of a display case or move the installed art.
5. Silica gel must be removable on one or more shelfs or trays that easily slide into and out of the silica gel compartment.
6. The silica gel compartment must vent into the art envelope through holes or linear gaps that are at least 0.95 cm (3/8 in) in width and run the length and width of at least 90% of each side of the deck.

i. If this gap exposes under deck components, those components must be obscured from view without blocking the specified air flow gaps.
ii. An air gap of at least 1.3cm (0.5in) must be located above, below, and to all sides of each layer of silica to facilitate air exchange.
iii. The silica gel compartment must be obscured from view.

7. All silica gel compartments *where filter systems are not implemented* are to be fitted with a gas sampling port, bored to a minimum internal diameter of 7mm (0.3in) to allow for environmental monitoring by The Met.
    i. See figure below for an example port (this port is an Applikon® Biotechnology CLS-1380-10 Septum holder with M18 thread and is currently available from Chemglass.com with a 6mm internal diameter).

2.05 Dust, pest prevention, and cleaning

1. All areas within, below, and above the case must be accessible for cleaning using standard vacuum equipment.
    i. The minimum gap for access is 12.7cm (5in).
    ii. Inaccessible areas must be sealed with polyethylene backer rod or a solid structure at a point that allows cleaning up to the backer rod or solid structure.
        1. E.g. Niche cases require sealing between the niche and case at all sides.
2. Access panels above and below cases must expose at least 85% of the width of the case.
    i. Only 15% of the case width can be obstructed by support structures such as feet, silica compartments, case struts or supports, or electrical boxes that might block vacuum equipment access.
3. At least one removable kick plate must be made for the bottom of each case to prevent dust accumulation and to hide any accessories under the case. The design and placement of the removable kick plate should be discussed with The Met and its designers.
4. A flexible, polymeric, door-sweep style fixture is to be attached to an adjustable height kick plate placed at the base of every case to minimize dust and debris incursion from the gallery to the space under the case.
5. Light attics or spaces above each case must include features that both vent heat and restrict 99.97% of dust particles sized 0.3 microns (0.0003cm) or larger from entering that space.
6. If large, accessible gaps remain on either side of a pocketed case, the gaps must be filled with easily removed gaskets or compressed foam rods that have been approved for use by The Met.
7. All potential pest entry points from walls and floors must be sealed completely to prevent pest access to non-art display areas prior to case installation.
    i. Vents and air transfer points must be sealed with hardware cloth (similar to 30 Mesh T304 Stainless .012" wire) to prevent pest entry into vent or air transfer areas, lighting fixtures, and electrical components.
    ii. Screens must be removable to allow vacuuming and cleaning of non-art case interiors or lighting fixtures.

2.06 Opening and closing mechanisms

1. Cases must be openable by a single person, without the use of specialized tools, equipment, or electricity, in less than five minutes.
2. Hinged door systems must have been tested for and demonstrated the capability of supporting the weight of the door when open and prevent deflection of any part of the display case.
3. Hinges and sliding door mechanisms must be concealed from the face and inaccessible from a security standpoint.

2.07 Locking mechanisms

1. All locks must be concealed from view and their primary door locking mechanism inaccessible when closed.
2. Locks must not be used as the mechanism that keeps the case closed. Other closing mechanisms or fixtures must be included to facilitate the case being held shut.
3. Lock mechanisms must maintain a seal that controls the leak rate (see section 2.03, Gasketing and Seals).

2.08 Security, locks, and alarms

1. The case manufacturer must coordinate with The Met to prepare every case for security locks or security alarm devices.
2. [Insert specific security requirements and/or devices for your institution.]

2.09 Linings inside the art envelope

1. Finishes for interior linings and panels as per approved drawings and case matrix.
2. All internal panels must be easily removable but securely fixed – all fixings are to be hidden, no visible fixings will be acceptable.
3. Moveable shelves, case backs, and any components that support art must be fitting with a locking mechanism that clearly indicate when they are secured.
4. Deck and pedestal surfaces must be resistant to marking, abrading, and oxidation due to periodic cleaning or reinstallation of art.
5. (Consider adding specs related to square, plumb, alignment of installed decks and backboards)

2.10 Interior trim, plinths, tables, label holders

1. Finishes for interior trim, plinths, tables, and label holders as per approved drawing and case matrix.
2. Profiles of interior components are to be provided as drawn.
    i. Case manufacturers are free to propose alternate profiles or assemblies provided that the alternate and its advantages are clearly detailed in words and drawings within the proposal.

2.11 Display case lighting

1. All case lighting is to be designed with Met Lighting Design approved specifications and shown within the lighting design documentation. This includes, but is not limited to, the lighting manufacturer, as well as specific track, fixture and accessory choices.

    Minimum lighting specifications:

    - LED Light Source
    - 90+ CRI
    - 3000K
    - Dimmable (flicker free to 1%)

Preferred manufacturers and products:

- Luxam micro track
- QTL linear
- Backlight™ Magic Cloud light panels

2. Visible flicker is unacceptable above 1% intensity.
3. Audible noises such as buzzing or high-pitched tones are unacceptable.
4. Lighting must be controlled (dimmable to 1%), and easily accessible for maintenance at the case but also be capable of being integrated into a gallery lighting control system (on-off).
5. Any lighting settings must be maintained through power cycling.
6. Light emitting diode (LED) is the only acceptable light source for internal case lighting. All light sources, including natural light must be filtered for ultraviolet (UV) radiation, and UV levels must not exceed 25 microwatts/lumen and should be as close to 0 milliwatts/m^2 as possible for built-in lighting.
    i. Total UV is measured at the surface of the deck in the art envelope.
    ii. If multiple fixture types are used, the total UV radiation is measured for each fixture type and measured again as a combined measurement of all light sources involved.
7. By default, lighting equipment, and associated wiring may not be located within the art envelope. Any lighting required within the envelope must be evaluated by both Met Lighting Design and other Met stakeholders.
8. All light attics require a minimum height of 12 inches for fixtures to be unrestricted and to provide easy access for maintenance and focusing. All dimensions must be evaluated with confirmed fixture specifications.
9. The heat associated with lighting systems must be segregated from the interior display environment and be situated such that the temperature does not increase more than 1.5°F within the display case when the lights are powered on.
    i. All areas in the case that contain lighting equipment must be provided with adequate means of air circulation and be located as far as possible from the art envelope. All venting techniques must be passive (i.e. no fans) and must eliminate visible light leaks.
    ii. All case lighting and heat vents should be installed to prevent pest entry while still allowing heat transfer from the lighting fixtures to the gallery.
10. All standards listed above must be represented in case design drawings and maintained through construction drawings and fabrication.
11. Case manufacturers may propose lighting options from other manufacturers provided that any alternate and its advantages are clearly detailed in the proposal. Specification drawings, cut sheets, samples, and in-case mockups must be provided. Approval of alternatives are at the discretion of Met.

2.12 Use of plywood, medium density fiberboard (MDF), acetoxy-cure silicone caulks, oil-based paints, greases and oils.

1. Plywood, MDF, and acetoxy-cure silicone caulks are not to be used within the art envelope.
2. If MDF or plywood used outside of the art envelope, the material must be of the “no added formaldehyde” specification, submitted for approval prior to use, with manufacturer’s name and supporting information provided.

3. If a silicone caulk is to be used, it should be a Met approved neutral-cure or platinum-cure silicone.
4. Oil-based paints are not to be used within the art envelope.
5. Greases and oils of any type are not allowed in the art envelope.

2.13 Use of active or internal environmental controls

2. The use of active filtration or air circulation as well as temperature or humidity control inside the art envelope is highly discouraged.
    i. In the rare instance when The Met is considering an active system, The Met's minimum requirements for that system include:
        a. An independent, secondary shut-off system in the event the settings go out of range
        b. A real-time remote monitoring system capable of sending automated alerts in the event the settings go out of range
        c. The case manufacturer must discuss the plan and implementation of the system with the Conservation, Engineering, and Science departments the during the design phase of the project.

Part 3. Onsite construction and installation of display cases by case manufacturer

3.01 Sequencing/scheduling delivery of casework

1. *Prior to case delivery, the manufacturer will provide a schedule of delivery and testing.*
    i. *Testing must be completed and failed cases remediated before decks and backboards are installed (see section 2.03).*
    ii. *The Met's project manager will coordinate/schedule leak rate testing and display case review with Met's DSR, curatorial department collection managers, and Conservation before cases arrive.*
2. The display case manufacturer shall coordinate delivery and installation of products furnished and/or installed so that:
    i. Locations of anchor plates, openings, and recesses for display casework are provided in time to be incorporated in drywall and architectural woodwork construction.
    ii. Access shall be provided for installation and testing of electrical work built into or concealed by display casework.
3. The case manufacturer must perform trial assembly of all casework before shipping to eliminate installation issues onsite at The Met.

3.02 Delivery, storage, and handling of casework

1. Components in the largest units must meet shipping and project field conditions at The Met.
2. Do not deliver products until storage and installation areas are free of rough construction trades and HVAC in gallery is fully functional.
3. Casework must be delivered in closed vans or containers with loose materials bundled to prevent loss and damage.
4. Casework will be stored in a clean, protected space and be maintained at ambient museum conditions.
5. Cases must be movable using a pallet jack.
6. Before delivery to the worksite, the case manufacturer must walk through the delivery route of casework from the delivery location to the project site to confirm dimensional restrictions and route with The Met.
7. *Before building or installing casework, the manufacturer must provide visual confirmation of the agreed upon materials and supplies intended for use with Capital Projects and DSR staff.*
    i. Meeting to be arranged and coordinated by The Met's project manager.
8. If casework arrives with discrepancies with drawings, report this to the project manager without delay and obtain instructions before proceeding.

3.03 Onsite project conditions and requirements

1. No food is allowed in the project space. Water, in enclosed containers, is permitted
2. Environmental conditions: HVAC system shall be operating and ambient occupancy conditions attained.
3. Adjoining work: constructed to specified tolerances and where applicable, to guaranteed dimensions.
4. Field measurements: display case manufacturer is responsible for the fit of their work in the finished space.
    i. Fabricate work to field measurements to be taken with the coordination of the contract manager or GC.

ii. If field measurements cannot be made without delaying the project, the contractor shall provide hold to dimensions and coordinate work of affected trades/sections to assure proper execution of adjoining work.

iii. The display case manufacturer is responsible for details and dimensions that result from field conditions and shall indicate on shop drawings all required field measurements.

5. *Review for functionality and adherence to drawings with The Met's Design, DSR, curatorial department collection managers, and Conservation representatives of the first of each display case type is required prior to installation of backboards and decks*.
6. Once testing is complete and backboards, decks, and furniture are installed, a final review of casework is required with The Met's Design, DSR, curatorial dept. collection managers, and Conservation representatives.
    i. This review generates a case by case punch list that is managed by the project manager. A printed punch list is attached to each case, and a master list is maintained.
    ii. After the punch list issues are resolved, a final review an sign-off for each case is required and includes The Met's Desing, DSR, curatorial dept. collection managers, and Conservation representatives.

3.04 Treatment of worksite by the case manufacturer

1. Protecting building surfaces: The case manufacturer must install casework without damaging building surfaces and with all evidence of drilling, cutting, and anchorage concealed by installed work.

3.05 Installation of display cases by the case manufacturer

1. All gallery walls, floors, ceiling penetrations, as well as any gaps and holes must be sealed with The Met approved materials before casework is installed.
2. Install work plumb, level and true to line and plane as measured from established lines and levels.
3. Provide blocking, grounds, shims, supports, leveling devices and rough hardware necessary for installation.
4. Anchor work securely in place.
5. Some cases will need to be bolted to the floor because of possible tipping concerns. (See section 2.01.3) Bolting locations to be noted on case drawings as well as on architectural floorplans to ensure there are no conflicts with existing service.
6. To prevent dust accumulation under difficult to access components such as beneath the silica compartment, backer rod or other foamed polymer should be installed to fill the inaccessible gaps.
    i. Cases should have these elements installed at the time and placement of their permanent installation.

3.06 Adjusting, cleaning, and protection of display cases after installation by case manufacturer

1. Case manufacturer must correct nonconforming, poorly fitting, and damaged work as specified by The Met.
2. The case manufacturer must remove and replace work that cannot be satisfactorily corrected at the project, as determined by The Met.
3. Case manufacturer is responsible for cleaning the subdeck, base, and all areas of the case before the case furniture is installed.
4. Case manufacturer is responsible for complete cleaning of glass and case interior at the completion of installation.

5. In the event there is ongoing construction during case installation, the case manufacturer is required to protect the exposed exterior of the installed cases from dust infiltration.
6. All debris associated with case construction and installation must be removed from case interiors and gallery spaces by the case manufacturer at the time of installation.
7. If pest activity (moth, beetle, rodent, etc.) is observed by the case manufacturer during the period of casework construction and installation, report the pest and the location to the project manager without delay and obtain instructions before proceeding.