

Architectural
Woodwork Standards

COUNTERTOPS



SECTION

SECTION 11

Countertops

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Guide Specifications

Are available through the Sponsor Associations in interactive digital format including unique and individual quality control options.

The Guide Specifications are located at:

Architectural Woodwork Institute (AWI)

www.awinet.org

Architectural Woodwork Manufacturers Association of Canada (AWMAC)

<http://awmac.com/aws-guide-specifications>

Woodwork Institute (WI)

www.woodworkinstitute.com/publications/aws_guide_specs.asp

SECTION 11

Countertops

introductory information

INTRODUCTION

Section 11 includes information on Countertops and Window Sills manufactured of Wood, High Pressure Decorative Laminate (HPDL), Solid Surface, Engineered Stone, Epoxy Resin, Solid Phenolic and Natural Stone Products and their related parts.

Quality assurance can be achieved by adherence to the AWS and will provide the owner a quality product at competitive pricing. Use of a qualified Sponsor Member firm to provide your woodwork will help ensure the manufacturer's understanding of the quality level required. Illustrations in this Section are not intended to be all inclusive. Other engineered solutions are acceptable. In the absence of specifications; methods of fabrication shall be the manufacturer choice. The design professional, by specifying compliance to the AWS increases the probability of receiving the product quality expected.

TYPICAL COUNTERTOP CONFIGURATIONS

- Wood Veneer Tops - This type of top consists of wood veneer laid up over a stable core, veneer edged, solid wood edged or with an applied decorative edge of another material as specified.
- HPDL Tops - This type of top consists of plastic laminate over a stable core, self edged or with an applied decorative edge of another material as specified.

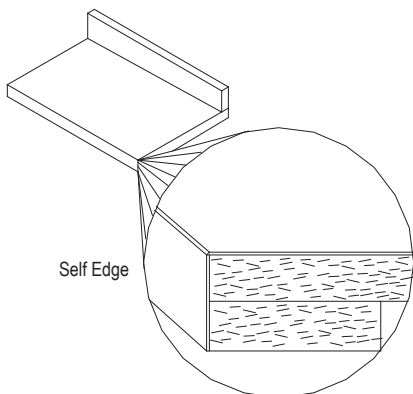


Figure: 11-001

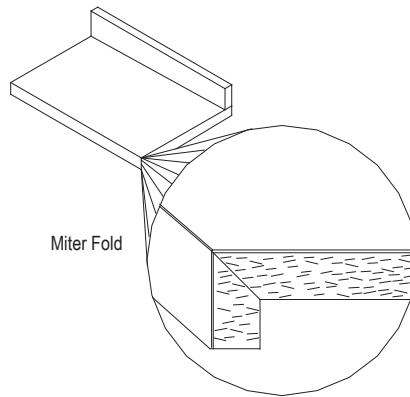


Figure: 11-002

- Post formed high pressure decorative laminated tops - This type of top consists of plastic laminate formed with heat and pressure over a stable core typically with a coved integral backsplash and must be specified.

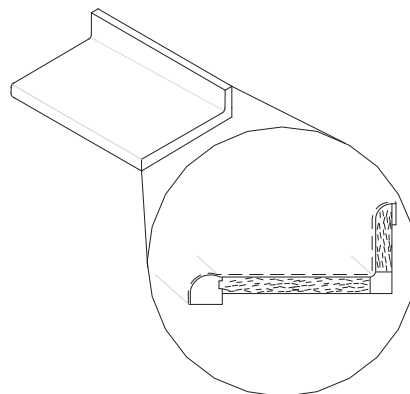


Figure: 11-003

- Combination Material Tops - This type of top may consist of a mixture of materials, such as wood, high pressure decorative laminate, inlays, etc.

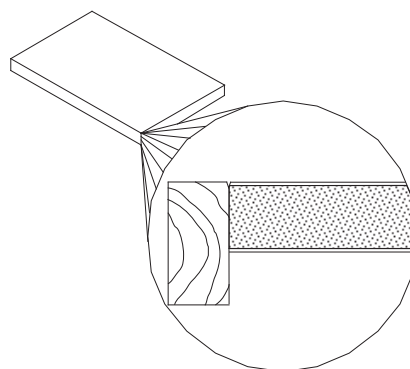


Figure: 11-004

- Solid Surfacing Materials - This type of top requires special fabrication techniques, depending upon the composition of the product. Many manufacturers fabricate and install the products. Must be specified by brand name and manufacturer. Typically only available in 1/2" nominal (11-13 mm) thickness.

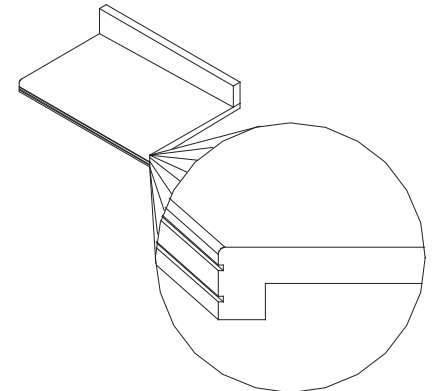


Figure: 11-005

Solid Laminated Tops - This type of top consists of narrow strips of wood, face glued together, similar to "butcher block," but custom manufactured to contract documents.

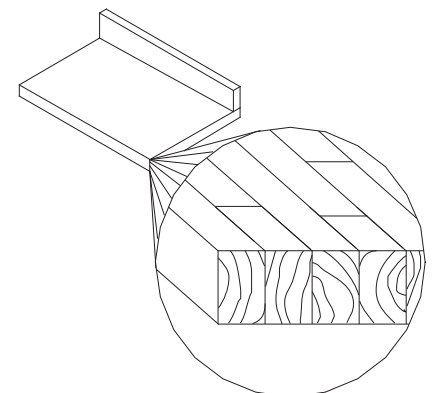


Figure: 11-006

introductory information

TYPICAL COUNTERTOP CONFIGURATIONS (continued)

- Solid Wood Tops - This type of top consists of boards edge glued to a desired width. In this kind of top there is no assurance of matching grain or color at the edges or individual ends of the boards.

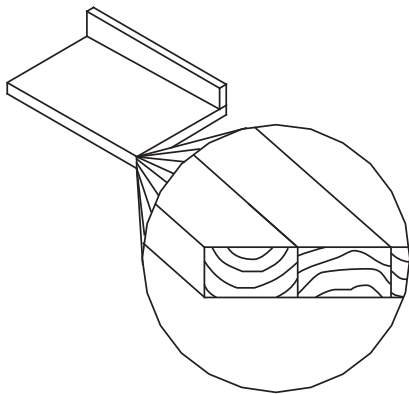


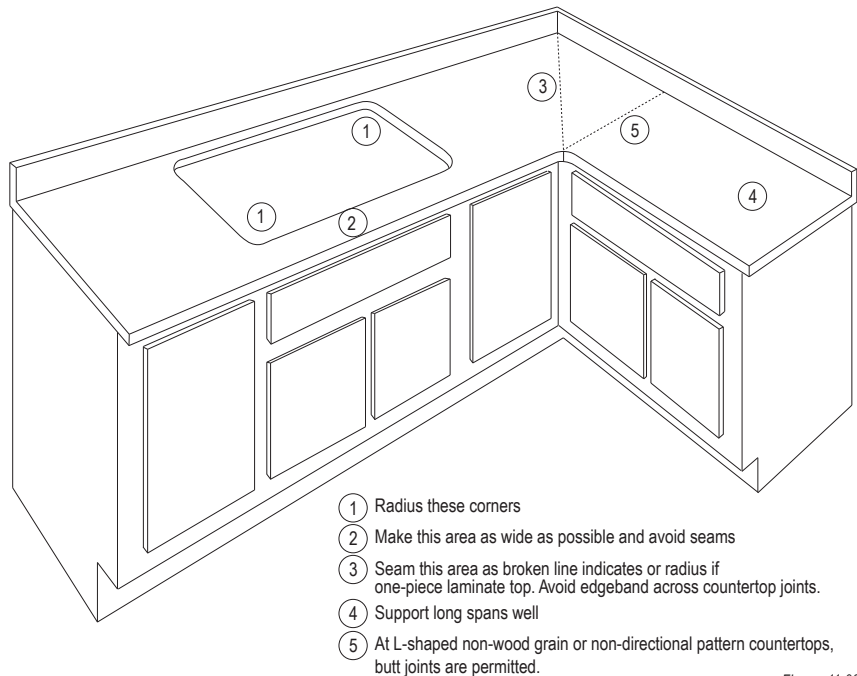
Figure: 11-007

- Epoxy Resin Laboratory Tops and Splashes - Specially formulated resin tops designed to resist harsh chemicals. Must be specified by brand name and manufacturer.

GUIDELINES FOR FABRICATION / INSTALLATION OF HPDL COUNTERTOPS

The following was taken in part from the National Electrical Manufacturers Association (NEMA):

- When making a cutout (as for electrical receptacles, ranges, sinks, grills, windows, chopping blocks, L shaped counter tops, and so forth), inside corners should be smoothly rounded using a minimum corner radius of 1/8" (3 mm). A router is an ideal tool for making cutouts.
- When removing large areas from a sheet of laminate (e.g., a sink cutout), the connecting strips between the remaining areas should be left as wide as possible.
- Factory-trimmed sheet edges and saw-cut edges should be routed and filed. Original edges on factory cut laminates are not finished edges since oversized laminates are supplied to allow for proper fabrication.



- 1 Radius these corners
- 2 Make this area as wide as possible and avoid seams
- 3 Seam this area as broken line indicates or radius if one-piece laminate top. Avoid edgeband across countertop joints.
- 4 Support long spans well
- 5 At L-shaped non-wood grain or non-directional pattern countertops, butt joints are permitted.

Figure: 11-008

- All chips, saw marks, and hairline cracks should be removed from cuts by filing, sanding, or routing.
- Backsplash seam areas on countertops which are exposed to spilled water or other fluids should be sealed with caulking to ensure a tight seal.
- When laminate is bonded to a core, precaution should be taken to prevent warping of the assembly. Laminates used on shelves or in long unsupported spans should make use of a backer. A thick backer (approximately the same thickness as the face sheet), can provide more stability than a thin backer. Thicker laminates can offer better dimensional stability and resistance to stress (corner) cracking. Paint, varnish, vinyl film, and fiber backers will not balance HPDL.
- Before using nails or screws, oversized holes should be drilled through the laminate with a sharp drill bit.

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TYPICAL PROBLEMS AT HPDL COUNTERTOPS - CAUSES AND PREVENTION

Some of the problems that may arise after laminates have been fabricated and installed are the following:

- **Cracking of the laminate at corners and around cutouts** may be caused by improper climate control, improper bonding and, sometimes, poor planning, or combination of these reasons. Cracking may be caused by shrinkage; proper climate control helps to prevent it. Rough edges, inside corners that have not been rounded, binding and/or forced fits can contribute to cracking. If the seams are properly placed in the layout of the laminate, stresses can be minimized.

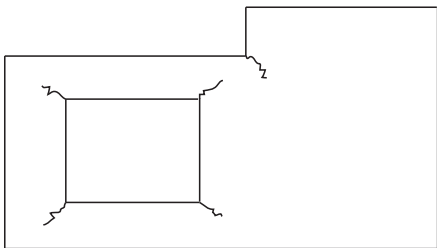


Figure: 11-009

- **Separation of the laminate** from the core may generally be caused by a poor adhesive bond. The bonding procedure should be reviewed with close attention to uniform glue line, uniform pressure and cleanliness of mating surfaces. If the edges fail to bond, extra adhesive may be applied and the product re-clamped.

Some cleaning agents, excess heat, and moisture can contribute to bond failure at joints and edges.

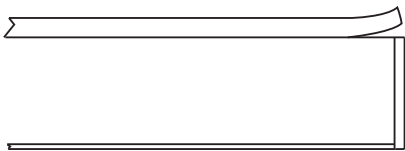


Figure: 11-010

- **Blistering or Bubbling** of the laminate surface away from the core can be caused by excessive heat, starved glue line, improper conditioning, and inadequate pressure or drying. Use of a PVA glue line and pressure over clean, conditioned laminates and core might have prevented the problem.

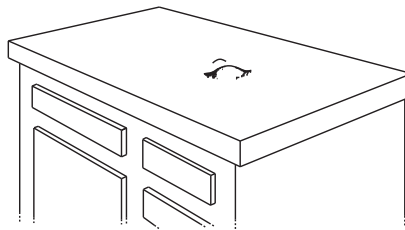


Figure: 11-011

The forming of a blister or bubble over a small area, often accompanied by a darkening of the laminate can be caused by continual exposure to a source of heat. Electrical appliances which produce heat and light bulbs should not be placed in contact with or close proximity to laminate surfaces.

- **Repeated Heating** may cause the laminate and adhesive to react and finally deteriorate after continual exposure to temperatures above 150° F (66° C).

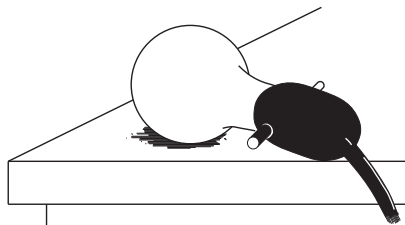


Figure: 11-012

- **Cracking of the laminate in the center of the sheet** may be caused by flexing of the core when it covers a wide span or by spot gluing. Wide spans call for sturdy framework, and special attention should be given to the uniformity of glue lines and gluing pressures. Also, care should be taken to avoid trapping foreign objects between the laminate and the core.

Cantilevered overhangs in excess of 6" (152mm) should be designed with appropriate supports.

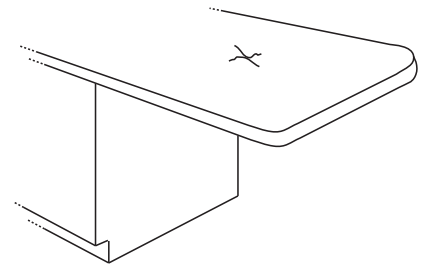


Figure: 11-013

Long, unsupported spans are generally avoided. Most manufacturers limit spans to between 30 - 36" (760 - 915 mm) before the addition of a support of some type. A wide variety of engineering solutions are available.

- **Warping of the assembly** may be generally caused by unbalanced construction or unbalanced glue lines. Proper HPDL backer sheets should be chosen and aligned so that their grain direction is parallel to that of the face laminate. Proper gluing is also important. If the core is secured to a framework, the framework should be designed to hold the assembly to a flat plane. Conditioning is also helpful.

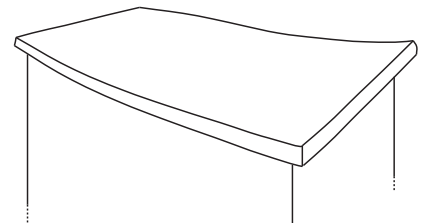


Figure: 11-014

introductory information

CHEMICAL or STAIN RESISTANCE

Requirements must be specified. Consider the chemical and staining agents that might be used on or near the surfaces. Chemical and stain resistance is affected by concentration, time, temperature, humidity, housekeeping, and other factors; it is recommended that actual samples are tested in a similar environment with those agents. Common guidelines can be found by referring to:

- NEMA LD3 (latest edition) for chemical resistance.
- ASTM D3023 and C1378 (latest editions) for stain resistance.
- SEFA #3 - Recommendations for work surfaces.
- SEFA #8 - PH, PL and W - Recommendations for phenolic, plastic laminate and wood casework.

ABRASION RESISTANCE

Requirements must be specified. When abrasion resistance requirements are a concern, users should consider the abrasive elements that might be used on or near the countertop surfaces. Common guidelines can be found in:

- ASTM C501 (latest edition)
- NEMA LD3-3.13 (latest edition)
- NEMA LD3.7 (latest edition)

HIGH PRESSURE DECORATIVE LAMINATE (HPDL) COUNTERTOPS

• **HPDL BACK AND END SPLASH CONSTRUCTION TYPES** - if not otherwise specified, shall be manufacturer's choice:

- **ASSEMBLY - 1, Wall Mount, Jobsite Assembled**

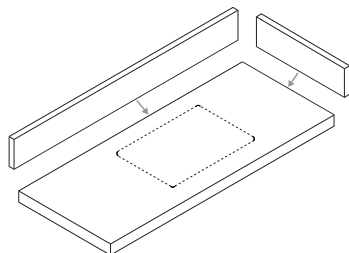


Figure: 11-015

- **ASSEMBLY - 2, Deck Mount, Manufacturer Assembled**

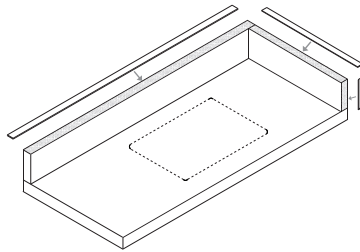


Figure: 11-016

- **WHITE BACKGROUND PAPER** is utilized in some HPDLs to achieve the high fidelity, contrast, and depth of color of their printed pattern, leaving a white line at exposed edges that is extremely noticeable with darker colors.
- **FLAME SPREAD RATED** - Class I Flame Spread Architectural HPDL countertops are available. Countertops desired to be certified as a flame spread rated assembly (versus simply having been built with a flame spread rated laminate surface) shall be specified as a "Class I Flame spread Rated HPDL Countertop."

The term "Class I Flame spread Rated HPDL Countertop" shall mean that the entire countertop assembly, including surface HPDL, backer, core, and adhesive, has been tested and certified as to its Class I Flame spread Rating by an authorized organization, such as Underwriters Laboratories, and must be manufactured by an approved company of the certifying agency.

Manufacturers of "Class I Flame Spread Rated Countertop Assemblies" require specific methods of installation and trimming in order to label and certify their product. Design professionals desiring to use a "Class I Flame Spread Countertop Assembly" should coordinate with an approved manufacturer during the design stage.

COUNTERTOP CONFIGURATION OPTIONS

- Self Edged w/ No Splash

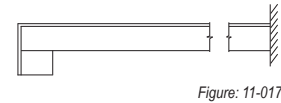


Figure: 11-017

- Self Edged w/ Butt Splash

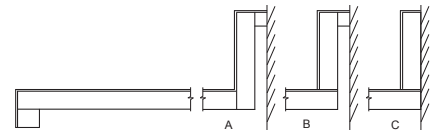


Figure: 11-018

- Self Edged w/ Coved Splash

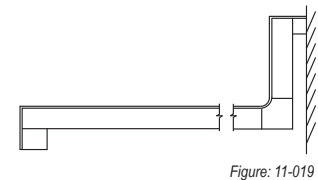


Figure: 11-019

- Post Formed Edge w/ No Splash

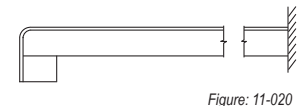


Figure: 11-020

- Post Formed Edge w/ Butt Splash

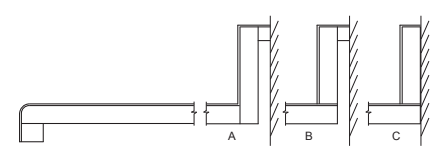


Figure: 11-021

- Post Formed Edge w/ Coved Splash

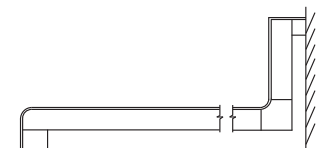


Figure: 11-022

- Fully Formed w/ Coved Splash

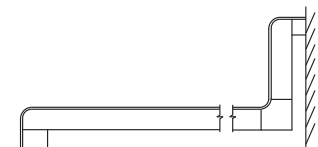


Figure: 11-023

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HIGH PRESSURE DECORATIVE LAMINATE (HPDL) COUNTERTOPS (continued)

COUNTERTOP CONFIGURATION OPTIONS (continued)

- No Drip Edge w/ Coved Splash

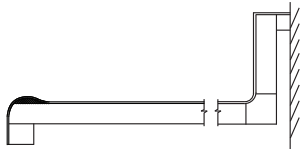


Figure: 11-024

- Wood Edge w/ No Splash

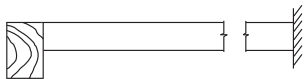


Figure: 11-025

OPTIONS AT TOP OF SPLASH:

- Waterfall w/ Scribe

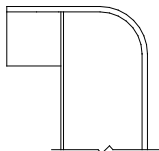


Figure: 11-026

- Square w/ Scribe

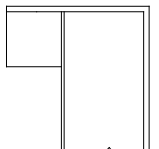


Figure: 11-027

- Square

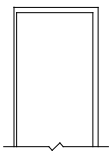


Figure: 11-028

DECK OPTIONS AT SPLASH:

- Horizontal Butt

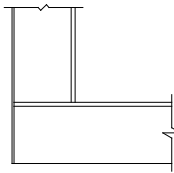


Figure: 11-029

- Vertical Butt

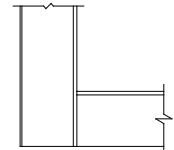


Figure: 11-030

- Coved

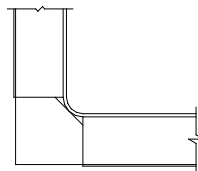


Figure: 11-031

FRONT EDGE OPTIONS:

- Self Edgeband w/ Wide Build Up

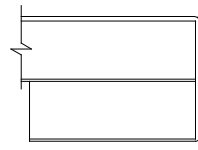


Figure: 11-032

- Self Edgeband Narrow Build Up

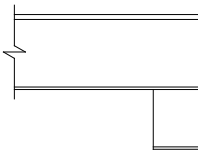


Figure: 11-033

- Self Edgeband w/ Drip Groove

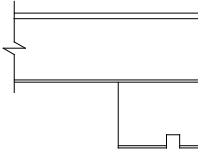


Figure: 11-034

- Waterfall

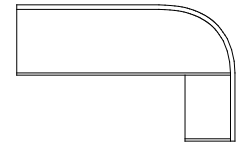


Figure: 11-035

- No Drip

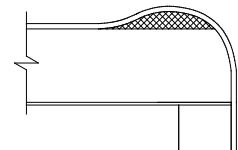


Figure: 11-036

- Full Round

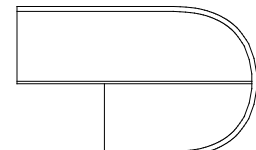


Figure: 11-037

- Solid Wood Edgeband w/ V Groove

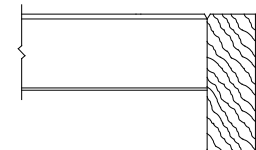


Figure: 11-038

- Solid Wood Edgeband w/o V Groove

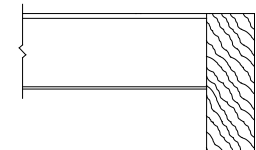


Figure: 11-039

- Solid Wood Edgeband w/ Overlaid Laminate

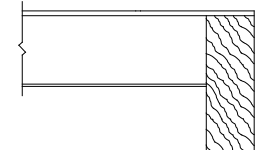


Figure: 11-040

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HIGH PRESSURE DECORATIVE LAMINATE (HPDL) COUNTERTOPS (continued)

FRONT EDGE OPTIONS (continued)

- Miter Fold

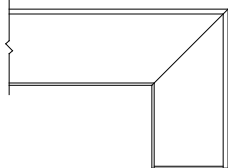


Figure: 11-041

- Thick PVC Edgeband

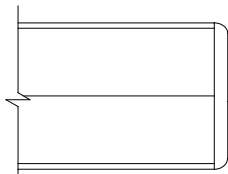


Figure: 11-042

- T Mold Edgeband

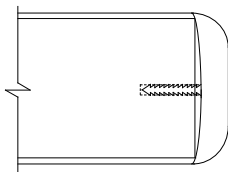


Figure: 11-043

TYPICAL MECHANICAL TIGHT JOINT FASTENER

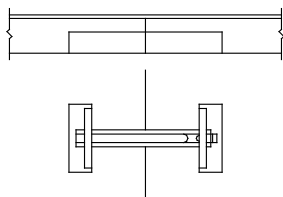


Figure: 11-044

SOLID SURFACE COUNTERTOPS

- COLOR and PATTERN MATCH:** Some slight color variation may exist from sheet to sheet, sheet to bowl, or sink products. In sheet stock, use of the same batch material will reduce these variations.

- REPAIRS:** When allowed, repairability varies from material to material and may be visible.

- PRECAUTIONS:** Product dimensions are nominal. If tolerances are critical, review them with your manufacturer and/or installer.

- MACHINABILITY** is an issue with some materials and shall be taken into consideration on selection.

CONFIGURATION OPTIONS:

- Built Up Edge

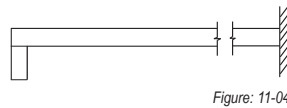


Figure: 11-045

- Built Up Edge w/ Butt Splash

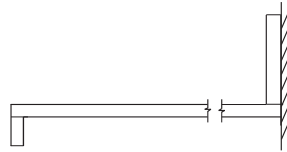


Figure: 11-046

- Built Up Edge w/ Coved Splash

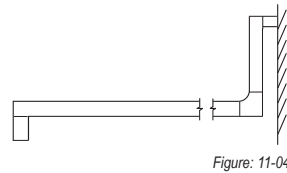


Figure: 11-047

TOP OPTIONS AT SPLASH:

- Waterfall

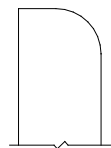


Figure: 11-048

- Square

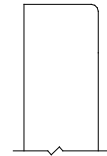


Figure: 11-049

DECK OPTIONS AT SPLASH:

- Butt

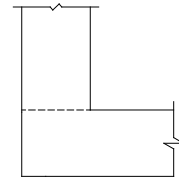


Figure: 11-050

- Coved

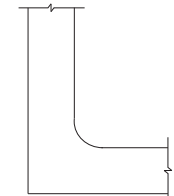


Figure: 11-051

EDGE OPTIONS:

- Waterfall

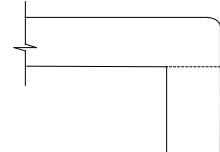


Figure: 11-052

- No Drip

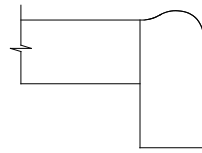


Figure: 11-053

- Build Up w/ Drip Groove

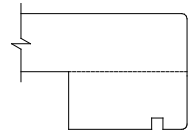


Figure: 11-054

SECTION 11

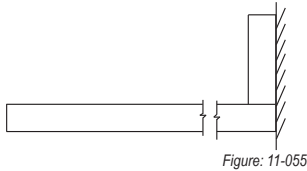
Countertops

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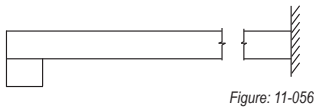
SOLID PHENOLIC, EPOXY RESIN, AND NATURAL/ENGINEERED STONE COUNTERTOPS

• CONFIGURATION OPTIONS:

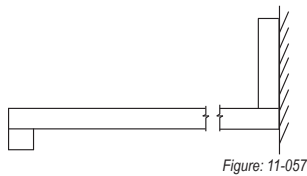
- Butt Splash



- Build Up

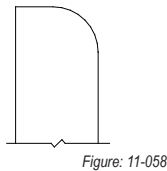


- Build Up w/ Butt Splash



• TOP AND DECK OPTIONS AT SPLASH:

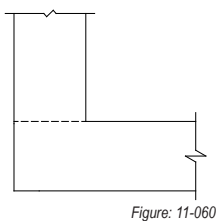
- Waterfall



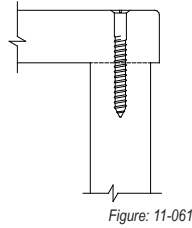
- Square



- Butt

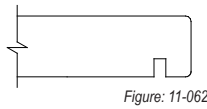


- Removable Ledge

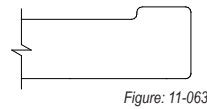


• EDGE OPTIONS:

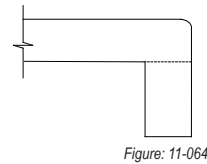
- Drip Groove



- Marine Edge



- Waterfall



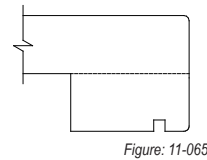
- Chamfer Edge



- Bull Nose Edge



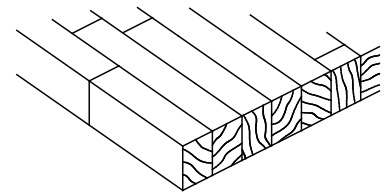
- Build Up w/ Drip Groove



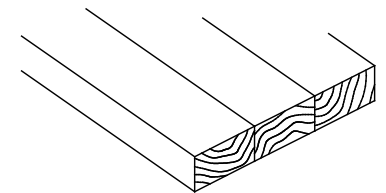
WOOD COUNTERTOPS

• CONFIGURATION OPTIONS:

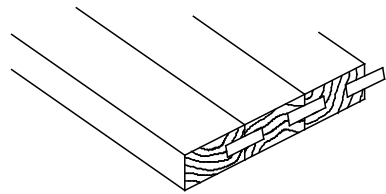
- Solid Butcher Block



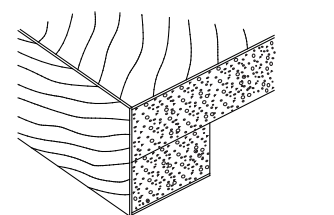
- Solid Wide Width



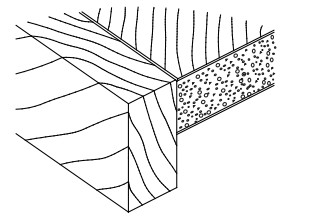
- Solid, Splined Wide Width



- Veneer Edgebanded



- Solid Edgebanded



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WOOD COUNTERTOP (continued)

- Solid Edgebanded w/ Overlaid Veneer

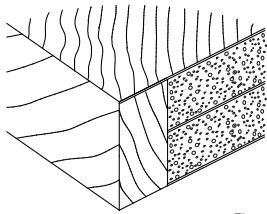


Figure: 11-071

To **PREVENT TELEGRAPHING**, inset solid wood edging when used must have similar moisture content as panel core, be glued securely and calibrated with panel core thickness prior to being laminated with a wood veneer on both faces.

SPECIFY REQUIREMENTS FOR

- Back and end-splash **ASSEMBLY** type.
- Flame Spread requirements.
- Laboratory use, such as:
 - Chemical-resistant work-surface material requirements or finish.
 - Abrasion-resistant work-surface material requirement.
 - Removable splash ledger.
- Special splash/deck or top or edge profiles.

RECOMMENDATIONS

- If **FIELD FINISHED, INCLUDE IN THE DIVISION 09 OF THE SPECIFICATIONS:**
 - **BEFORE FINISHING**, exposed portions of woodwork shall have handling marks or effects of exposure to moisture removed with a thorough, final sanding over surfaces of the exposed portions and shall be cleaned before applying sealer or finish.
 - **CONCEALED SURFACES** - Architectural woodwork that may be exposed to moisture, such as those adjacent to exterior concrete walls, etc., shall be primed.
 - The underside of wood countertops shall be sealed with at least one coat of primer or sealer.
- **REVIEW** the GENERAL portion of Sections 3 and 4 for an overview of the characteristics and the minimum acceptable requirements of lumber and/or sheet products that might be used herein.
- **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage which becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork are not to be furnished or installed by the architectural woodwork manufacturer or installer.
- At **HPDL SINK TOPS**, use of under-mount sinks is not recommended because of the potential for moisture problems, even with proper preparation and installation, and:
 - Use of veneer core plywood with Type II adhesive, industrial-grade particleboard or fiberboard with a 24 hour thickness swell factor of 5.5% or less.
 - Either self-rimming sinks or sinks with surface-mounted metal retention rings are recommended.

The **COMPLIANCE** portion of this Section has been intentionally excluded to protect our sale of Grade Rules, which allows us to provide these standards free of charge to Design Professionals.