

NORTH STAR SOLID SURFACE FABRICATION & INSTALLATION GUIDE



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P O L Y E S T E R

Fabrication & Installation Guide

NORTH STAR SOLID SURFACE FABRICATION & INSTALLATION GUIDE

This guide is intended for use by Authorized Professional Fabricators and Installers as a reference. The guidelines in this publication must be adhered to in order for the product warranty to be valid. Any deviation from these procedures must be approved in writing by FAMA Industries Corporation prior to commencement.

The Fabricator /Installer must be trained and certified by a FAMA authorized facility, as the contents of the training seminar outline specific procedures and techniques, not entirely included in this guide, which must be followed in order for the product warranty to be valid.

North Star Solid Surface Material
Manufactured by FAMA Industries Corporation

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STORAGE AND HANDLING:

Protect the surface from possible scratching and support adequately to protect damage from flexing in shipment. Carry materials on edge, as you would glass. Handling on the flat could create undue stress. When transporting pre-fabricated NSSS, especially if cutouts are pre-cut, take extra care. NSSS should be crated before carrying or support rails clamped to the tops to prevent breakage during transit to installation site.

GETTING STARTED WITH NSSS:

1. Inspect sheet stock to ensure materials have uniform pattern and colour and are free of damage or defects prior to beginning layout.
2. Record the pour date of sheets used on your work order for future reference. The pour date is stamped on the back of the sheet approximately every 2 linear feet. Should fabrication hide the pour date from view, record the pour date in a visible location on the underside of the sheet for customer reference. The Pour date is a reference to the batch produced, and is a mandatory requirement for processing warranty claims.
3. Check colour match of sheetstock and adhesive. A chart is available in the adhesive section of the guide indicating recommended North Star adhesives to use with corresponding NSSS sheets.
4. Confirm colour match and uniformity of colour prior to cutting material.

COLOUR MATCH:

NSSS produces slight variations batch to batch due to the blending of natural minerals and polyesters. While the variations between cycles are typically acceptable, it is recommended to fabricate using materials from the same pour date. Using products with differing pour dates require a trial colour match.

- A) Sheets should be matched using the Pour Date located on the back of the sheet
- B) If, the pour date has been removed, a trial match is necessary as detailed below

To check colour consistency, place sheets to be matched side by side on a level surface. Sand with 400 grit sandpaper and wet both sheets. This will give a clear indication of colour match for installation with a satin finish. If sheets are to be installed with a high gloss, polishing a small area will verify colour matching.

- Colour matching pieces should be evaluated under similar lighting conditions to that of the job.
- Due the randomness and varied intensities of the veining patterns offered in the Artisan Collection colour matching can only be guaranteed of the background and vein tones.

PATTERN UNIFORMITY:

Check pattern uniformity between sheets for particulate colour and distribution on sheets that are to be seamed together. NSSS is designed to have a random dispersement of particulate of varied size throughout the sheet that adds a natural beauty to the product. This occasionally causes particulate to appear slightly intensified in some areas and scattered in others, and is not considered a manufacturing defect. Typically, using consecutive sheets, and butting the edges from the same side of the pallet achieve the best match. If the pattern appears off, try spinning one of the sheets 180 degrees.



SHEET TOLERANCES:

Dimensional:

COLLECTION	LENGTH	WIDTH	THICKNESS
Ambient	144" +/- 6.4mm (1/4")	760mm (30") +/- 6.4mm (1/4")	12.7mm (1/2") +/- 1.2mm (3/64")
World	144" +/- 6.4mm (1/4")	760mm (30") +/- 6.4mm (1/4")	12.7mm (1/2") +/- 1.2mm (3/64")
Cool Cravings	144" +/- 6.4mm (1/4")	760mm (30") +/- 6.4mm (1/4")	12.7mm (1/2") +/- 1.2mm (3/64")
Artisan	121" +/- 6.4mm (1/4")	760mm (30") +/- 6.4mm (1/4")	12.7mm (1/2") +/- 1.2mm (3/64")

Maximum thickness variance within a sheet:

1.2mm (3/64")

Tapered Edge:

Where the edge taper is greater than 1.2mm (3/64") and cannot be incorporated into fabrication

Dimensional Deflection (Warp):

Dimensional deflection of sheet goods not exceeding 1.2 mm (3/64") per 760mm (30") through either the length or width is considered acceptable

Face side black and/or white spots - Allowable surface defects:

Black Spots	less than 0.20mm (0.0508")
White Spots	less than 0.20mm (0.0508")
Foreign Matter	less than 0.20mm (0.0508")

Face side voids, pinholes, and ripples:

When minor defects such as scratches, voids, bumps, or ripples occur on the face side of the sheet, sanding the surface using an orbital with 120 grit or equivalent abrasive paper for about 3 minutes per square yard/ meter may resolve the problem

Backside voids, pinholes, and ripples:

Voids occurring on the backside of the sheet that are below 6.4mm (1/4") in diameter and 3.2mm (1/8") deep are considered acceptable, as are ripples and bumps +/- 1.6mm (1/16")

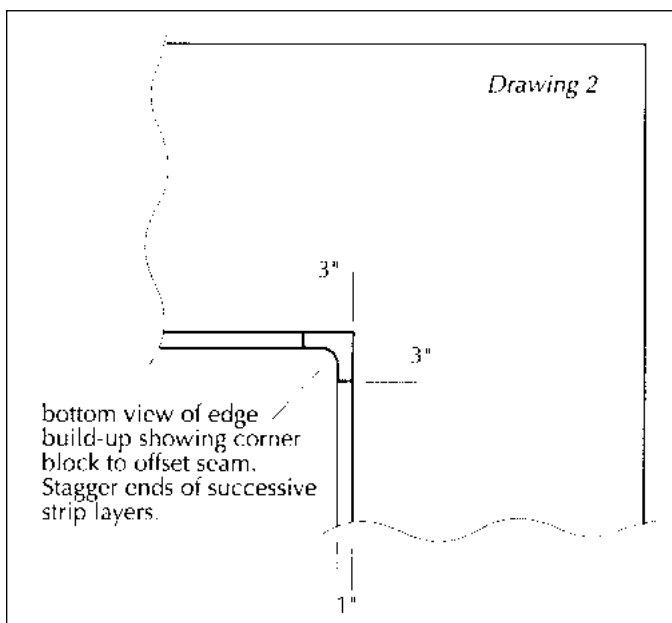
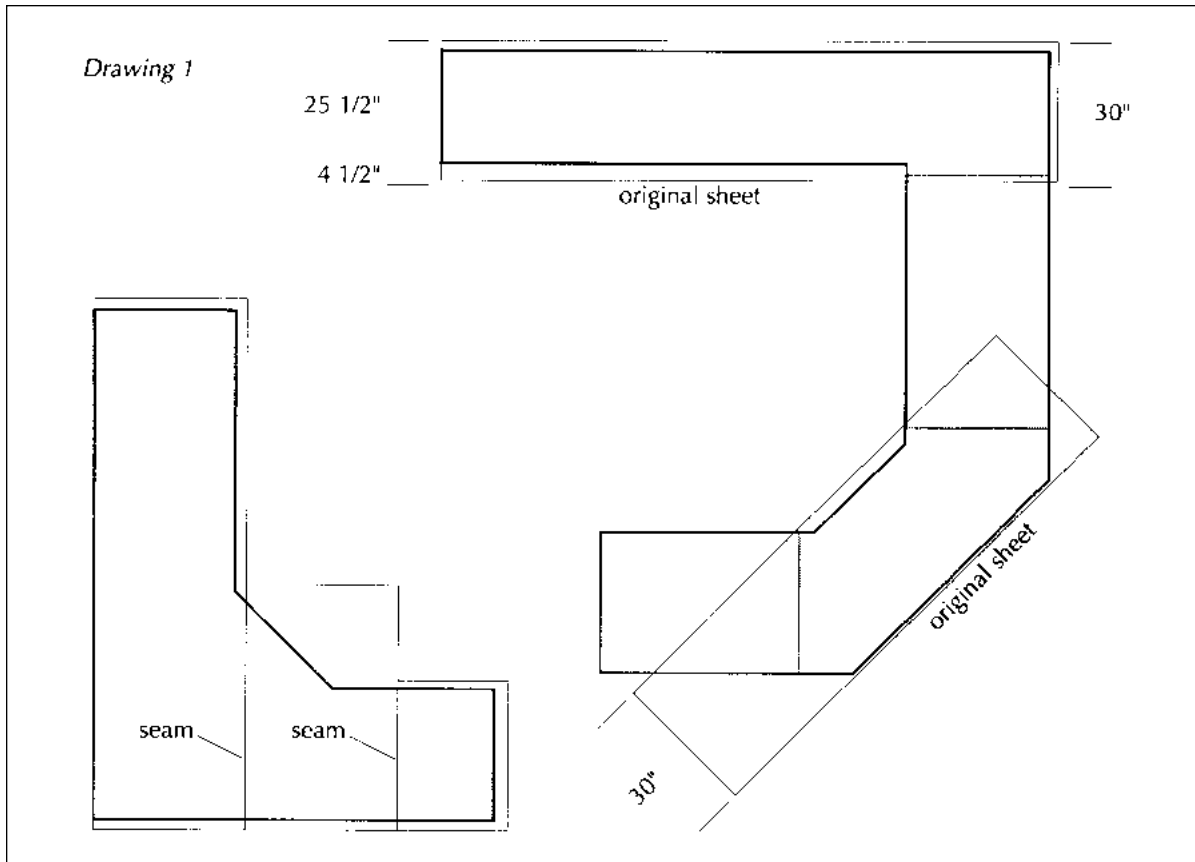
Edge Cracks and/or Chips:

Corner chips of 6.4mm (1/4") wide/deep off the length, as well as edge chips or nicks of the same dimensions, represent allowable limits



SHEET LAYOUT & SEAM PLACEMENT:

Use offset butt joint method (See Drawing 1). This also applies to all inside angles (i.e., 45°), etc. Please note that there should never be joints in corners.



1. Inside corners must have at least a minimum 1" radius. Do not join edge strip at corner (see Drawing 2). Use a block of solid surface (L Block) at least 3" x 3".
 - This will increase the strength of corners, especially over lazy susan cabinets.



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2. All edge build-ups are recommended to be double thickness (see Drawing 3).

Note: Extra care is required to ensure single layer drop edge are installed on flat rigid support, as the countertop will conform over time to the substrate on which it is placed.

PREPARING SEAMS:

1. Router all joints with a straight flute bit ” diameter or larger using a straight edge that has been machined within 1 or 2 thousandths of an inch.
2. Check dry fit, if any gap is visible, re-router the seam and re-check fit.
3. Sand joint edges to remove any tool marks and improve adhesion with approximately 60-micron sandpaper on a hard sanding block or fold paper and sand from bottom side of sheet (be careful not to round top edge of sheets).
4. Clean edges with de-natured alcohol on clean white cloth or lint-free paper towel.

ADHESIVE:

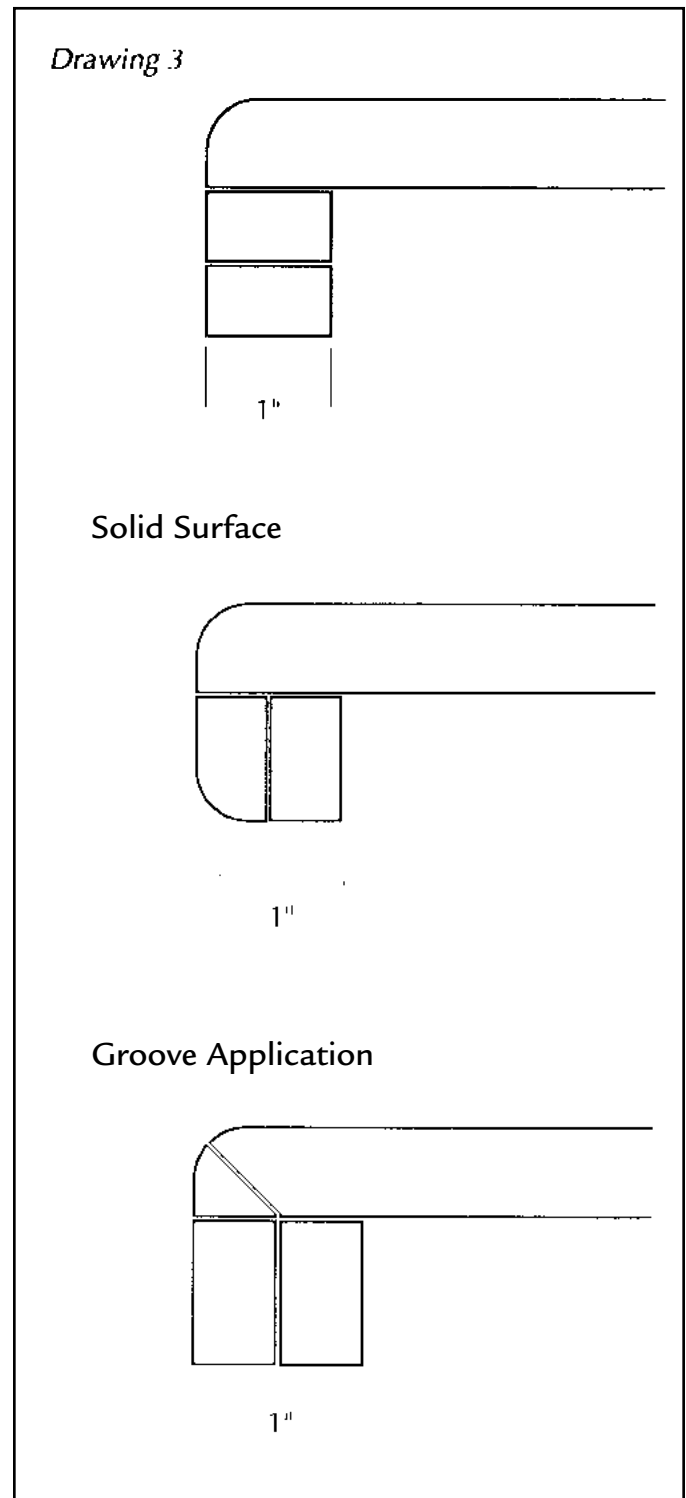
(as per instructions provided at time of purchase)

North Star Adhesive is pre-coloured and requires no pre-mixing. Ensure you have the correct colour and enough adhesive on hand for your job. A 10 oz. (250 ml) cartridge of adhesive produces a single 1/8" bead approximately 40 linear feet in length. 1oz. (30 gr.) Seam kits will provide approximately 4 - 5 feet of seam.

Adhesive Storage & Handling:

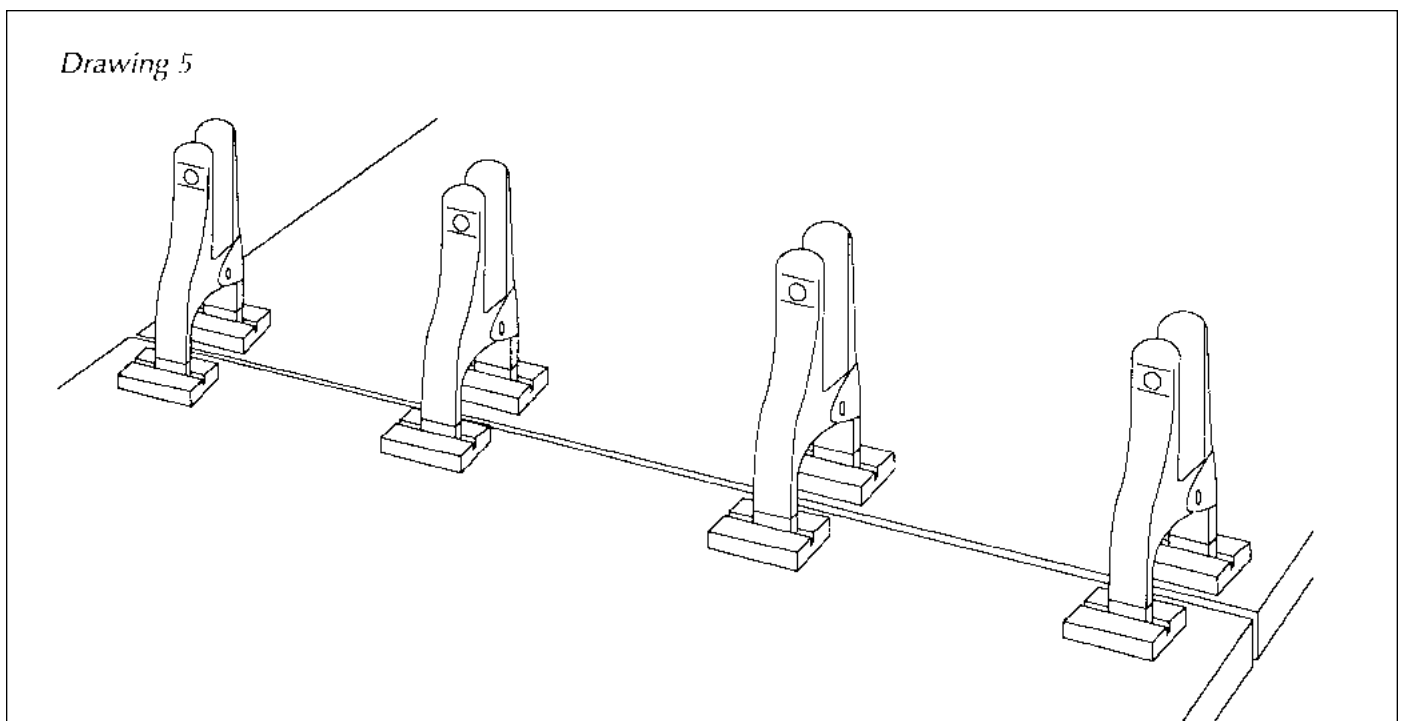
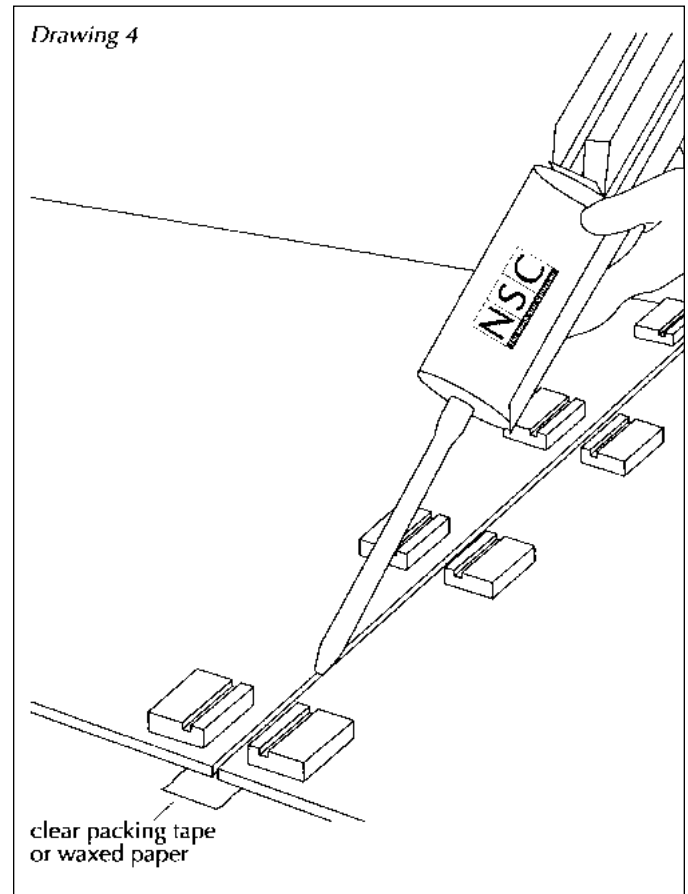
1. Open Cartridges should be recapped and stored in a cool dark place.
2. Sealed Cartridges have a shelf life of approximately 18 months
3. Storage at temperatures above 75°F or 24° C. may minimize shelf life and affect performance of adhesive.

Caution: Discard empty containers in safe place, as contents are poisonous and flammable. Adhesive and activator must never come in contact with the eye or mucous membranes. If this happens, flush with water for at least ten minutes, then seek medical attention. Contains “organic peroxide”. (Refer to Safety Data Sheets)



SEAMING:

1. Place material to be seamed about 1/8" apart. Fill joint with a double bead of adhesive. (see Drawing 4).
2. Push sheets together to squeeze out adhesive being careful not to over clamp the joint, starting the deck seam of adhesive. Do not sand or disturb the glue until completely set.
3. Should you be required to leave the job site prior to seam being fully cured, leave a sign to notify sub-contractors to stay clear for 24 hours.
4. To clamp the joint together, use a hot melt glue gun to attach blocks on to the top of the counter on either side of the joint. Use a spring clamp to draw the two edges together and leave in place until glue sets. Remove blocks and hot melt glue with a sharp putty knife, taking care not to scratch the surface. Do not remove blocks with impact – pry off slowly. Make sure to use de-natured alcohol to soften hot melt glue before removing blocks (see Drawing 5).



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SEAMING CONTINUED:

5. Alternate method of clamping is to use vacuum clamp type system.
6. Do not over-tighten clamps, as this will force all of the adhesive from the joint. The use of a pipe clamp or bar clamp is not recommended.
7. Cure time (approximately 60 minutes) depending on the temperature of the work area, can be shortened by mildly elevated temperatures. Glue will not cure properly below 60° F. Cured adhesive should not dent or feel rubbery although some stickiness may be evident.
8. Use a router on ski's or a seam leveller type tool to remove excess glue and level the joint.
9. Finish the joint by sanding with an orbital sander with 60-micron sandpaper, followed by a light sanding of entire surface to produce an even finish. Continue with specified finishing techniques to achieve desired finish (see polishing section).
10. Try to avoid seams in areas that may be exposed to direct sunlight (i.e., bay windows, skylights, etc.) Deck seams must be reinforced with a 4" seam block of NSSS, keeping seams 3" away from cut outs wherever possible (see Drawing 11). If a seam falls over a dishwasher, the same application of reinforcing must be applied, using a 12" seam block, instead of a 4" seam block.
11. Avoid seaming together materials of strong colour contrast if they may be exposed to direct sunlight. The rate of heat absorption will differ between the light and dark colours causing dissimilar rates of expansion and potentially warping the material. NSSS has a thermal expansion rate of 11.7 microns per metre per degree C. This would equate to approximately 5.0 mm (3/16") per 12' per 80 degrees C. Allowing a 5.0mm (3/16") gap per 12' between the NSSS and the wall will allow sufficient room for expansion and contraction in nearly all applications.
12. Overhangs up to 8" must be supported with minimum 3/4" plywood, thereafter bracing supports or brackets are required. The plywood support for overhangs must extend at least two times as far in the opposite direction to the unsupported area (i.e. an 8" overhang support must extend 16" under the counter in the opposite direction). The steel frame support method used by some fabricators is acceptable. If there is a need for solid build-up to countertop overhang, 3" holes must be cut into the plywood section that does not overhang at approximately 9" centres. This will not sacrifice structural integrity of the plywood and will allow heat dissipation.
13. Cook top cutouts must be made with a template and router and be reinforced with NSSS corner blocks 1/2" x 4" x 4" with a minimum 1/4" inside corner radius. In addition, one layer of 3 mil. foil heat reflective tape, at least 2" wide, must be applied to the inside perimeter of cook top opening. This is to prevent damage in cook top cut-outs due to excessive heat. Failure to conform to this procedure will void the 10-year warranty (see Drawing 11).



NSC OPTIONAL FEATURES:

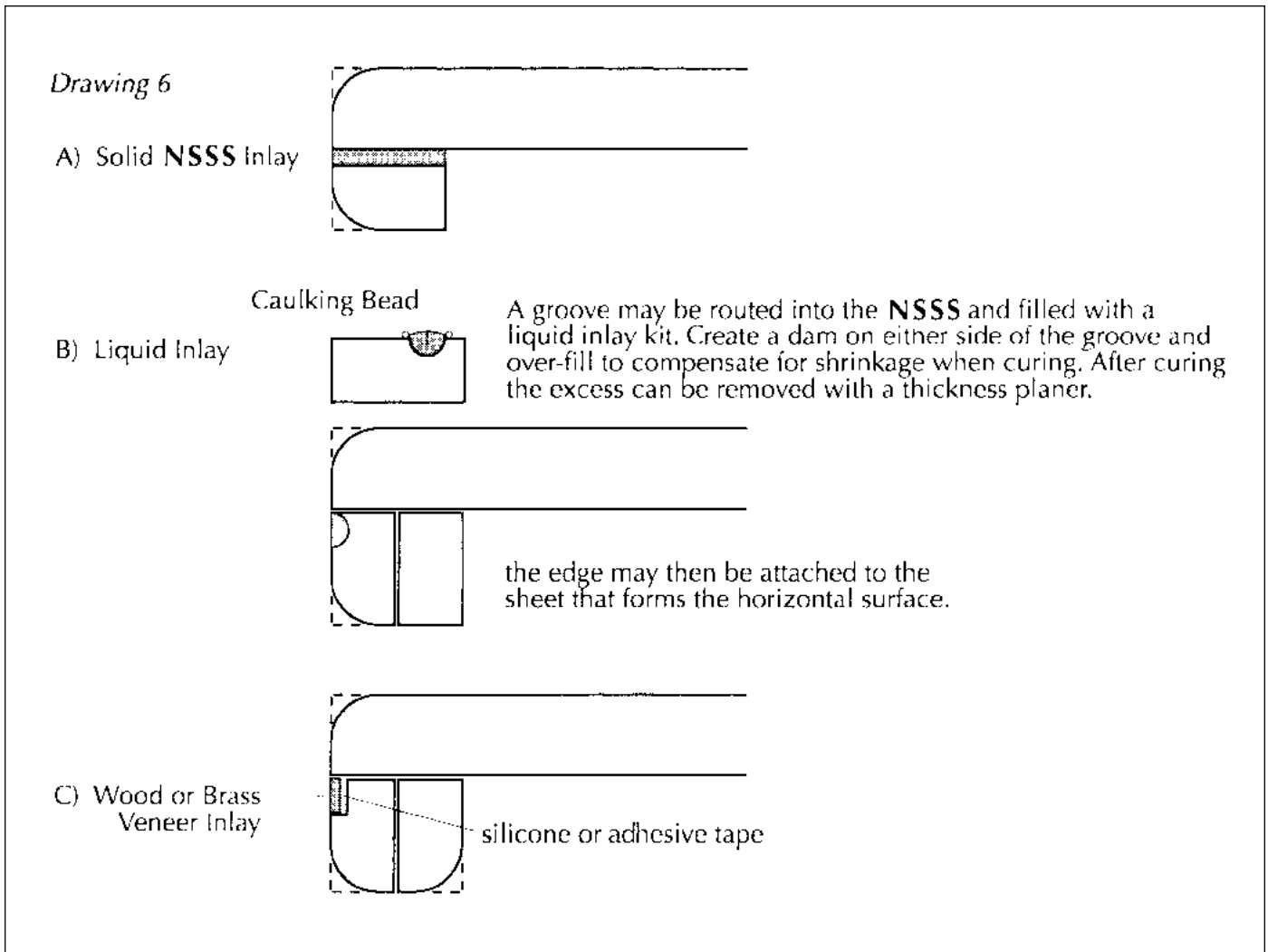
Edge Treatments:

The variety of edge treatment possibilities is endless. The design and styles are chosen by each individual fabricator based on their ability and the market demands.

NSSS to NSSS bonding must be done with NS Adhesive. Prepare surfaces to be bonded by sanding with a sanding block to 'scuff' surfaces and clean with

de-natured alcohol. Apply an even bead of adhesive to the surface. Place spring clamps 1" apart. Keep clamps straight with even pressure in the centre of the edge.

Do not laminate NSSS to wood in a sandwich construction. Recommended method for inlays is to use a brass or wood veneer strip. (See Drawing 6)



FINISHING:

High gloss finishing is not recommended in kitchen use for horizontal work surfaces or in any application that may subject the material to abrasion.

Satin finish may be supplied in a number of grades. Most commonly satin finishes are produced with a 30-micron abrasive.

Sanding and Polishing Procedures:

The finish of NSS material in its raw state from the factory is 60 micron or a 220-grit finish. To achieve the desired finish always begin your sanding process with a 60 micron or equivalent sanding disc on a 6" or 8" random orbital sander.

Move your sander with a slow and even pace in a back and forth pattern overlapping 50% with each pass. Be sure to clean sanding dust off between each sanding step with a dry cloth or air nozzle and compressed air. **

When sanding NSSS never skip more than two successive grits of sandpaper, as previous scratch patterns may not be entirely removed. **

The degree of gloss can be increased to a near mirror finish with the use of consecutively finer grades of abrasive.

Several manufacturers produce abrasives specifically designed for this purpose. Following are steps of a few options:

Option #1:

Norton Norax U288 film discs are available for solid surface polishing, each kit comes with a colour-coded guide and the desired finish is achieved by sanding using the selected abrasive films.

The Part numbers are as follows:

U288 X45 Tan	Matte finish
U288 X35 Green	Satin finish
U288 X10 Blue	Semi-gloss
Bear-Tex MF S/C disc	High gloss

Option #2:

Norton No-Fil Microfinishing Film Q130:

Q130-100 micron	Scratch removal
Q130-60 micron	Matte finish
Q130-30 micron	Satin finish
Q130-15 micron	Semi gloss finish
Q130-9 micron	Gloss finish

Follow the 9-micron sanding with a two-step polishing procedure to be performed with an orbital polisher and polishing pad:

1. 3M - Marine High Gloss Gel Coat compound (#06039) or (#06025)
2. 3M - Perfect It III (#81235) or (#05936)



FINISHING CONTINUED:

Option #3:

Standard grade abrasives can also be used however the abrasive media is often less consistent and swirl marks and scratches can be left on the surface.

# 150	Scratch removal
# 220	Matte finish
# 400	Satin finish
# 600	step # 4
# 800	Semi Gloss Finish
# 1000	Gloss finish

Follow the # 1000 sanding step with a two-step polishing procedure to be performed with an orbital polisher and polishing pad:

1. 3M - Marine High Gloss Gel Coat compound (#06039) or (#06025)
2. 3M - Perfect-It III (#81235) or (#05936)

Most of these products or their alternates are available through automotive (Auto-body) supply stores.

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SANDPAPER CONVERSION CHART

*CAMI Coated Abrasives Manufacturers Institute (North America)

**FEPA Federation of European Producers Association

	*CAMI (US standard)	**FEPA (P-Scale)	Finishing Scale	Average Particle Size	
				Micron	Inches
FINISHING	1200	P2000	A16		
	1000			9.6	0.00042
	800			12.3	0.00051
	600	P1200	A25	15.8	0.00060
	500	P1000		16.0	0.00062
	400	P800		18.3	0.00071
	360	P600	A30	19.7	0.00077
	320		A35	21.8	0.00085
	280	P500	A45	23.6	0.00092
	240	P400		25.8	0.00100
	220	P360	A60	28.8	0.00112
	180			P320	30.2
	150	P280	A65	35.0	0.00137
	120			P240	36.0
	100	P220	A75	40.5	0.00158
	80			P180	44.0
	60	P150	A90	46.2	0.00180
	40			P120	52.5
	36	P100	A110	53.5	0.00209
30	P80			58.6	0.00228
24	P60	A130	66.0	0.00257	
20			P50	78.0	0.00304
16	P40	A160	83.0	0.00363	
12			P36	97.0	0.00378
10	P30	A200	116.0	0.00452	
8			P24	127.0	0.00495
6	P24		141.0	0.00550	
4			P20	156.0	0.00608
3	P18		192.0	0.00749	
2			P16	197.0	0.00768
1.5	P14		260.0	0.01014	
1			P12	268.0	0.01045
1	P10		326.0	0.01271	
0.8			P8	351.0	0.01369
0.6	P8		412.0	0.01501	
0.5			P6	428.0	0.01669
0.4	P6		524.0	0.02044	
0.3			P4	535.0	0.02087
0.3	P4		622.0	0.02426	
0.2			P3	638.0	0.02488
0.2	P3		715.0	0.02789	
0.1			P2	740.0	0.02886



CUTTING BOARDS / HOT PADS:

NSSS makes an excellent loose cutting board – however the cutting board should always be made from colour matched material, just in case you need it for a repair down the road. Two layers 1/2" thick, laminated together with NS adhesive to produce a 1" thick cutting board, or hot pad is recommended. Always place rubber feet on hot pad. This will prevent warping and carries the feeling of substance that is created with the built up front edge of the countertops. 1/2" thick cutting boards will eventually warp as they may reach thermal forming temperature when used as a hot pad. Avoid putting cutting boards in the dishwasher to prolong the life of them.

NSSS INTEGRAL SINKS:

1. Solid Surface sinks are adhered to Solid Surface material with NS adhesive. It is recommended that a rough cutout is made bearing an opening of approximately 1" smaller than the size of the sink used (inside sink dimensions).
2. With the countertop upside down, position the sink in its exact location. Block the sink with NSSS blocks made from scrap pieces and attach them around the edge of the sink with hot melt glue. Make sure not to put the blocks too tight against the sink edge so the sink can be pulled and dropped back in place easily.
3. Pull sink, turn it upwards and clean the sink flange and countertop where sink will be glued with de-natured alcohol.

4. Apply a double bead of colour matching NS Adhesive on to the sink flange and spread with a Popsicle stick. Turn sink up side down and drop it in place between blocks.
5. Clamp sink to countertop by using appropriate clamps (C-clamps, vice type clamps etc.)
6. Allow glue to fully cure. Carefully remove blocks. Turn Countertop right side up and flush trim inside of sink then profile with a sink bowl bit of your choice and sand to desired finish.

NOTE: NEVER POUR BOILING WATER DIRECTLY INTO A SOLID SURFACE SINK. ALWAYS RUN COLD WATER SIMULTANEOUSLY TO AVOID POTENTIAL CRACKING. ENSURE THAT PLUMBING FITTINGS ARE NOT OVERTIGHTENED AND GARBAGE DISPOSALS DO NOT EXCEED HP. FAILURE TO COMPLY WITH THESE GUIDELINES VOIDS THE SOLID SURFACE SINK WARRANTY.

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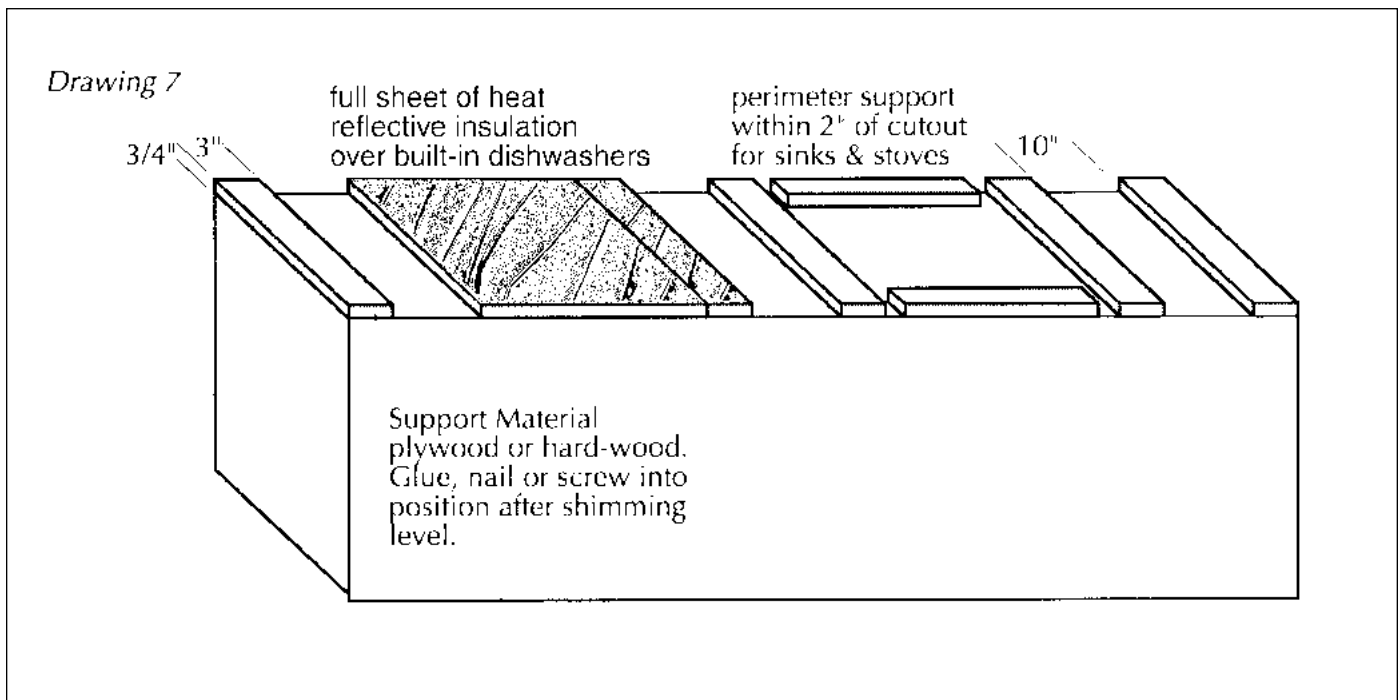
CABINET PREPARATION:

1. Make sure cabinets are secured to the wall and each other.
2. Level cabinets, use shims if required. Shim between cabinet and build-up, not between build-up and NSSS.
3. Cabinets over 36" in width must have a vertical post support.
4. On lazy susan cabinets or cabinets with solid cut out all but perimeter of top and support with strips as required. A section of cabinet top can be left adequate to support turntable rod.

5. For the underside of countertops above dishwashers and other heat generating appliances, we recommend installing a 24" x 24" piece of heat reflective foil insulation (Hot Water Tank)(see Drawing 7).

This product serves two purposes:

1. It reflects heat downwards keeping the NSSS cool when dishwasher is running.
2. It is an excellent vapour barrier and prevents mould build-up on the underside of the countertop due to steam from the dishwasher and can easily be installed with insulating adhesive or by stapling directly to the plywood build-up.



CABINET PREPARATION CONTINUED:

6. Sink and appliance supports must be within 2" of cut-out around total perimeter
7. Due to the endless variety of installation situations, it is nearly impossible to cover each in detail. It is the responsibility of the fabricator to provide support for the NSSS adequate to withstand the load typical of the situation (i.e., support an adult's weight without deflecting enough to cause damage or stress). Inadequate support voids the warranty.
8. If these specifications do not appear to cover your project, contact NORTH STAR SURFACES at 800-383-9784, for recommended procedure prior to commencement of project. Any deviations must be agreed to in writing.
9. On all inside corner cabinets and cabinets with wide drawer openings or cutouts, pay extra attention to strength of support. Where required, re-enforce with an oak or metal bracket/strip on edge below build-up. Areas must be able to support an adult's weight without deflecting, as any bending out of the material will create stress on the material a considerable distance away.
10. Cabinets that allow for a build-up of less than 3/4" must have additional support recessed into cabinet frame.

PREFERRED INSTALLATION METHOD:

1. With countertop trimmed, profiled and sinks or sink cut-outs done, Turn countertop upside down on workbench.
2. Cut plywood build-up strips to specified width (minimum 3")
3. Chamfer the bottom edge along the length of the build-up strip that will go along the front edge of the countertop. This will allow the plywood to be positioned close to the edge build-up without touching the glue bead along the edge, therefore minimizing the chance of the edge being 'blown' due to expansion / contraction of the product.
4. Proceed by applying dabs of silicone onto plywood strip while upside down and use small amounts of hot melt glue approx. every 16". Quickly turn plywood, positioning appropriately and apply pressure for a few seconds until Hot Melt adhesive sets. Follow the same steps to adhere plywood strips to rest of countertop allowing 10" on centre minimum for spacing.

NOTE: This method will allow you to apply plywood build-up near cut-outs and corners, providing excellent support when countertops are set on cabinets and also makes installation a lot easier by only having to fasten the tops to cabinets with screws from the underside of the cabinet cleats especially when you are dealing with site seams.

Work Area Preparation:

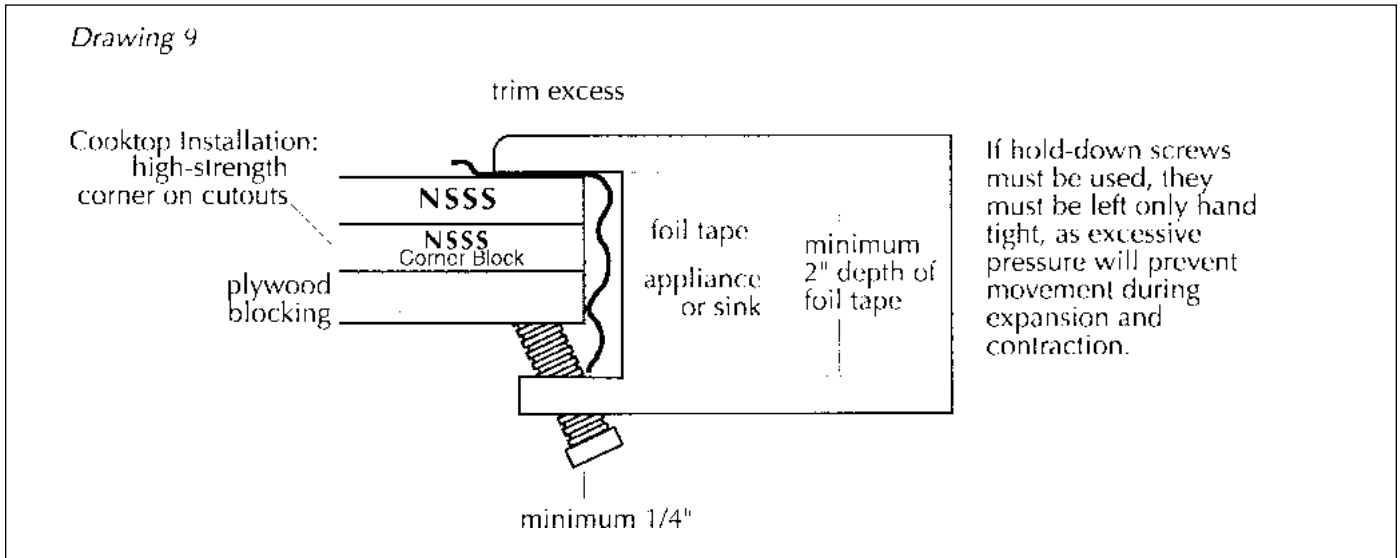
1. Prepare a work area preferable outdoors to minimize dust. Ensure adequate room for comfortable movement and good lighting. Use this area for cutting build-up strips, etc.
2. Try to minimize dust by covering furnace vents and closing doorways. Taping plastic over window and door openings also helps to contain the dust. During renovation work, completely empty kitchen cabinets, or have the homeowner do so.

Always use power tools with proper dust collection attachment.

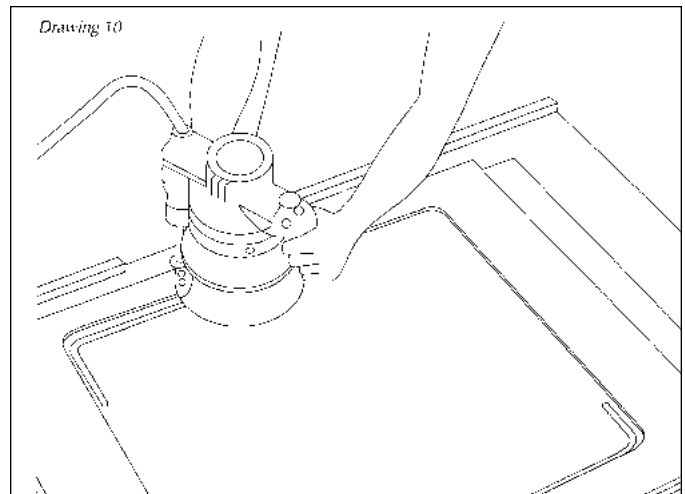
FIELD CUT-OUT & COUNTERTOP INSTALLATION:

1. Position fabricated countertops on cabinets and examine for proper fit at joints. Allowing 5.0mm (3/16") per 12' between the NSSS and the wall will allow sufficient room for expansion and contraction in nearly all applications.
2. Shim as required aligning joint. Remember to shim between cabinet and build-up – not between NSSS and build-up as the shim can create a pressure point. Make necessary cutouts remembering to support pieces to prevent them from falling into the cabinet causing damage to the cabinet.

3. Use a template with minimum 1/4" radius at inside corners to make an appliance cut out (See Drawing 10). Use only a router with a minimum 1/2" diameter bit to make the cut into the countertop, then smooth the sharp edge with a 1/8" radius round over bit, or sand the top and bottom edges for a smooth, chip-free finish.
4. Support the cutout close to the edge of the opening. Maximum setback for support is 2".
5. Allow minimum 1/4" space from sides of all heat-generating appliances to provide for expansion and heat dissipation. (See Drawing 9)

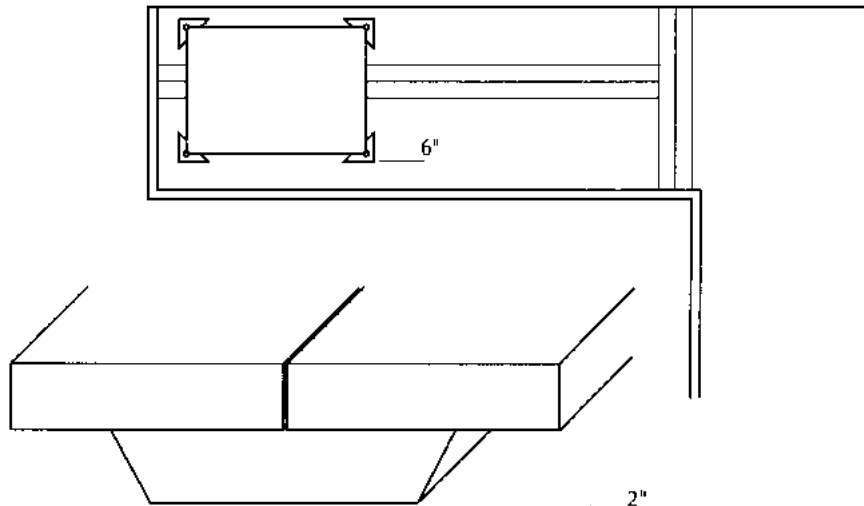


6. Seams should not run through or near appliance cut outs.
 - There is not warranty coverage when a seam runs through a cut out.
 - In order for any seam to be covered under the NSSS 10 year warranty, seam-reinforcing strips must be bonded in place using the NSSS adhesive.

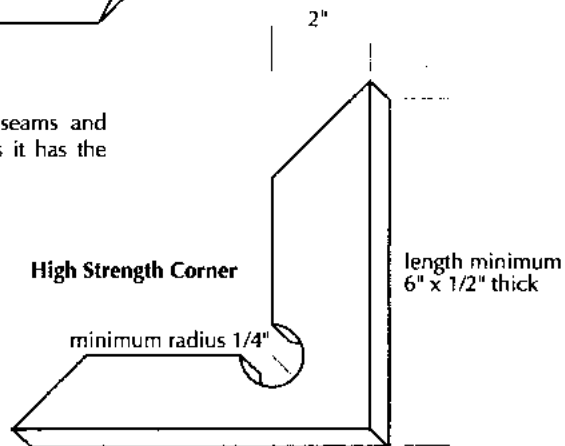


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Drawing 11



* material used for high-strength seams and cutouts should be solid colour, as it has the highest tensile strength.



FIELD CUT-OUT & COUNTERTOP INSTALLATION CONTINUED:

7. For cook top installation, apply a single layer of 2.5" aluminium heat reflective tape around the cut-out so that it folds over the top surface and extends beyond the outer edges of the cooktop flange. Trim excess after installation. Tape should create an apron approximately 2" deep (See Drawing 9). Certain brands of cooktops have been found to transfer excessive heat, damaging the solid surfacing material. This damage is not covered by warranty.
8. Remove hold down screws and position cooktop using only silicone to affix cooktop to the counter. If hold down screws must be used, always insert a wood spacer between NSSS and screw. Screw is not to come in direct contact with NSSS, or be tight enough to restrict movement with expansion and contraction.

FIELD SEAMS:

1. Arrange all necessary supplies and tools for adhering joints. Apply one dab of silicone caulking every 12" on front, rear and centre supports.
2. Place first sheet on cabinet, position and clamp to restrict movement. Place and align second sheet on cabinet and leave approximately 1/8" space at joint to allow for joint adhesive.
3. Use clear packing tape between NSSS and cabinet to prevent seam adhesive from bonding NSSS to cabinet.

BACKSPASHES:

Up to 5" High:

1. Apply dabs of Silicone every 8 – 10" to back of backsplash with just enough hot melt adhesive to hold in place until silicone sets.
2. NSSS adhesive can also be used to attach the back splash to the countertop providing a coved splash, by using a router with a tilt base and a core box bit. Many coving systems are commercially available. Contact North Star Services technical support for a recommended system.

Full Height Backsplashes:

1. Apply dabs of silicone every 8-10" across and down on a clean and dust free surface.
2. Apply hot melt glue in dabs, just enough to tack panel to wall until silicone sets. Insert small spacers to raise full height splashes at least 1/16" off horizontal surface.
3. Install the backsplash and hold in place for a few seconds until hot glue sets.
4. This procedure also applies to tub and shower surrounds

Ceramic Tile Backsplashes:

1. Allow a 1/8" gap between top of counter and bottom row of tiles; fill this gap with silicone. Fabricator must leave suitable information to make tile-setter aware of installation specifications or inform contractor of specifications. Do not use a cement grout between tile and countertop.

THERMOFORMING:

The following are the recommendations for thermoforming NSSS...

- For best results, a convection oven is recommended for even heat distribution
- An alternative method using a heat gun is possible but not recommended due to the inconsistency of heat distribution. (When using a heat gun, have the setting on high and continuously move the gun back and forth to prevent scorching)
- To thermoform NSSS, a core temperature of 260 degrees F is required. Care should be taken to prevent the product from exceeding 300 degrees F, as excessive heat may produce burns.
- While thermoforming, use padded spring clamps every 3-4" to hold shape and prevent clamp edges from marking product.
- Thermoforming difficulties increase as the width to be formed increases, this can be attributed to the difficulty in maintaining thermoforming temperatures uniform
- While tighter radius's are possible with experience and practice, NSSS products should achieve a thermoformed radius of 12"

Due to the chemistry of the product, thermoforming is not recommended for veined and backlit products.

INSPECTION & CLEAN-UP:

1. IMPORTANT: FABRICATOR/INSTALLER MUST LEAVE CUT-OUT PIECES OR OFF-CUTS OF ALL NSSS COLOURS USED IN A PERMANENT LOCATION ON SITE. INSTRUCTIONS MUST BE WRITTEN AND LEFT WITH THE OWNER - TO BE KEPT FOR POSSIBLE FUTURE (COLOUR MATCHED) REPAIRS. THOSE PIECES MUST BE HOT MELT GLUED OR AFFIXED TO THE INSIDE OF CABINET UNDER OR BEHIND THE SINK, AGAINST THE CABINET WALL.
2. Check to ensure all work is complete, sand to remove minor scratches, lightly sand entire surface to provide an even finish. Clean up work area, and discuss care and maintenance of NSSS with the homeowner to ensure that the end user does not void the manufacturer's warranty through misuse or abuse.
3. In the event that a customer requests an installer to provide NSSS in a manner that does not meet the NSSS installation specifications, the installer must fill out a four part memo to notify the parties concerned and to remove any liability from themselves. Note any changes that are required to bring the installation up to specification. Retain one copy and leave one copy at site. Forward one copy to North Star Surfaces, and if applicable, one copy to the dealer.
4. Once installation is complete, be sure to leave the homeowner a Care and Maintenance Packet including Warranty Registration Card.

CARE AND MAINTENANCE:

Each Customer must receive a Care and Maintenance Packet to ensure a proper understanding of the care and maintenance involved with NSSS surfacing and be eligible to register for the ten year Limited Warranty.

Guidelines:

- Always use hot pads or trivets under hot pots or heat producing appliances (NOT GLASS TRIVETS)
- Try not to use high gloss finishes in high traffic areas
- Always use a cutting board
- Felt pads should be placed under hard objects or pottery to protect high gloss finishes
- Avoid the use of harsh chemicals (paint remover, drain cleaners, etc...) on NSSS surfaces
- Never stand on your countertops

The finish of NSSS surfacing should be specified as one of the following:

Matte Finish:

Cleaning: To clean NSSS surfaces, soap and water will remove most stains. For the removal of more stubborn stains the use of a green Scotch Brite pad and a mild abrasive cleaner should remedy the problem.

Scratches: To remove scratches, random sanding using a swirling motion with 240 grit or equivalent sandpaper, followed by cleaning with a green Scotch Brite pad and a mild abrasive cleaner should remedy the problem.

CARE AND MAINTENANCE CONT.:

Satin Finish:

Cleaning: To clean NSSS surfaces, soap and water will remove most stains. For the removal of more stubborn stains the use of a less abrasive white Scotch Brite pad and a mild abrasive cleaner should remedy the problem.

Scratches: To remove scratches, try random sanding the area using a swirling motion with 400-grit (or equivalent) sandpaper followed by 600-grit. The area should then be cleaned with a less abrasive white Scotch Brite pad and a mild abrasive cleaner. To return the finish to its original lustre a spray on polish, such as “Countertop Magic™”.

High Gloss Finish:

Cleaning: To clean NSSS surfaces, soap and water will remove most stains. More stubborn stains should be removed by using a polishing compound, such as 3M Perfect-It III with a soft cloth.

Scratches: To remove scratches from a high gloss finish, progressive random sanding starting from 400 grit (or equivalent) sandpaper, up to 1000 grit. The surface should then be machine polished to achieve its high gloss finish. It is recommended to contact a certified fabricator.

SEAMS – TROUBLE SHOOTING

Problems with seams can usually be attributed to one or more of the following:

1. Excessive clamping pressure forcing all glue out of seam.
2. Failure to provide a seam block under seam.
3. Improper shimming or support at joint or on an overlap.
4. Consumer:
 - Hot pot placed directly on or next to seam
 - Climbing onto counters that have inadequate support.
5. Shearing glue from seam by movement of material prior to curing of glue. Adjusting top surfaces material to level seam should be done prior to clamping as the scissor action of the two pieces may shear most of the glue from the joint.
6. Sanding or stressing the seam area prior to glue being fully cured.
7. Contamination in seam area (i.e. wax, oil or dye from cloths, residue from unclean tools, gloves, wiping cloths, solvent.)
8. Wide temperature changes in material during curing process (i.e., gluing cold material in a warm room will cause materials to expand as they reach room temperature, this may cause seam failure and brittleness.
9. Settling of structure (i.e., building settles or cabinets not properly installed).
10. Use of stale-dated or expired glue (check for crystallization). Refrigerating glue will extend shelf life – store in a cool dark area.

PATCHING SYSTEM FOR LARGE PARTICLE PRODUCTS

Repair system designed to allow for invisible repairs of cracks or chips with out removal or replacement of material from service.

Repair Technique:

1. Cut a groove in the counter along the crack line using a router or carving tool with a flexible shaft. The groove must be approximately 5/16 inch wide. (1/4 to 3/8 inch) and extend almost through the material (7/16 inch).
 2. The groove should be cut with a straight flute router bit of 1/8 to 1/4 inch diameter.
 3. The groove should be irregular along the edges and the contour should follow the pattern of the granules.
 4. Next using a cutter with a pointed tip carve out some of the granules along each edge of the groove. (This irregular pattern will make the repair more invisible)
 5. Clean the groove with de-natured alcohol on a clean white cotton cloth or paper towel.
 6. Using the NS adhesive apply a small bead of adhesive along the bottom of the groove to seal the opening and prevent the repair resin from leaking out during the next step. Tape up the edges of the crack to prevent resin leakage at the ends or on vertical section repairs.(modeling clay may also be used)
 7. After the adhesive sealing layer has set up, inspect to ensure that the seal is complete and that there is no place for the resin fill to escape.
- Ambient Collection repairs:**
- **** In the case of repairs using Pearlescent or Metallic pigments in the resin base, follow the procedure below Prior to adding the catalyst****
- a) Thoroughly mix the resin base
 - b) Add bag/vial of pearlescent/metallic pigment into the resin base
- c) Some pigment will remain inside the bag, but 95% should be removed.
 - d) Thoroughly blend the pearlescent pigment into the resin base until the base is consistent in colour. Continue repair procedure from Step 8
 8. Following the instructions on the repair kit container, mix the catalyst into the resin base, stir well and pour into the groove until it is level with the top edge.
 9. Pour a small amount of styrene into the dry granules. (Just enough to dampen the surface, not wet)
 10. Shake the granules while rotating the container to evenly wet the particles and prevent particle segregation.
 11. Wearing gloves sprinkle granules into the resin in the groove until it is over filled. Tamp the granules down into the groove and refill as needed. This step is critical in achieving a good match. When finished the granules should be piled up about a quarter of an inch above the surface and extend out a quarter of an inch or more beyond each side. Ensure that the particles are saturated with resin, if needed pour a small amount of additional resin onto the granules.
 12. Watch the repair for any sign of the resin level dropping and granules drying out which may indicate a leak in the sealing layer. Add more resin as needed until the resin gels.
 13. The repair should be left to cure for 24 hours at 70 degrees f.
 14. Sand off the excess material using coarse grit abrasive until just above the plane of the repaired surface.
 15. Sand of the balance of the material with a random orbital sander using water to lubricate the surface and to minimize dust. (Start with 100 micron and progress down to 15 micron)
 16. Polish the surface using a cutting compound on a polisher with a lamb's wool pad at approximately 1000 to 2000 RPM.
 17. Observe repair for any defect

NORTH STAR SOLID SURFACE FABRICATION & INSTALLATION GUIDE

Trouble shooting and other Applications:

Surface voids: Small voids (up to approximately 1/16 inch) may be filled with repair resin that can be sanded off when set. If the voids are close to the size of a granule or larger they should be enlarged and abraded to improve adhesion using a dremel tool. Glue a granule or granules into place using the resin as an adhesive. Sand when fully cured. For a fast repair in a very small area substitute NS adhesive for the resin and sand in one hour. The problem with using FAMA resin in a repair is that it is harder to sand and has a higher degree of gloss: when polished this will cause a variation in the appearance of the finished repair.

Surface appears textured when polished: This is caused by sanding the repair before it is completely cured, or from heating the material by aggressive polishing. To repair let the material cure and cool if applicable, then re-sand with the 30 and 15-micron sandpaper. Polish as per instructions being careful not to over heat the material.

Insufficient filling, especially on vertical surfaces can cause large voids. These should be repaired using the same technique as per steps # 1 to # 16. (No short cuts here)

In the case of repairing chips, follow steps 4 through 16 omitting steps 6 and 7

For further information on Repair Techniques, please contact our Customer Service Department at **800-383-9784**.



FABRICATOR NOTES

[A series of 18 horizontal grey bars intended for fabricator notes.]

10 YEAR LIMITED WARRANTY

North Star Surfaces warrants to the end user that it will repair or replace the product, for a period of up to 10 years after initial installation, if such material develops visible defects or otherwise fails, due to manufacturing defects.

This warranty applies only to the North Star Solid Surface product that has been installed by North Star Authorized Fabricator/Installers in accordance with the Fabrication and Installation Guides and which has been used and maintained by the purchaser in accordance with the care and cleaning instructions. Copies of the NORTH STAR Fabrication and Installation Guides and Care and Cleaning Instructions are available from your dealer.

For coverage under this warranty, you must provide proof of purchase with the date of initial installation when you seek service. For service under this warranty, you must notify either the dealer from whom you purchased the material, or North Star Surfaces. Repair or replacement shall include reasonable labor charges. This does not include any costs for the removal, repair, cleaning beyond removal of scrap material or replacement of fixtures, hardware or decorative treatments (such as floor, wall or ceiling treatments) or the removal of plumbing or gas-fittings or fixtures or electrical wiring.

NORTH STAR SURFACES obligation under this warranty is limited to the remedies specified in the first paragraph of this warranty. No implied or expressed warranty or merchantability or fitness for a particular use for any other warranty except those specifically stated in this warranty, or required by law is granted, except for liability for any loss or any damage, including direct, or consequential or incidental damages, arising out of the use or inability to use the North Star Solid Surface materials.

This warranty gives you specific legal rights. You may also have other rights which will vary from State to State, or from Providence to Providence. Federal Law does not permit the disclaimer or modification of implied warranties arising under applicable State or Provincial Law for consumer products. However, any such implied warranties shall expire at the earlier of the expiration of the stated warranty required under the State or Provincial Law. Some jurisdictions do not allow limitations on how long an implied warranty lasts or the exclusion or limitation or incidental or consequential damages, so the above limitations and exclusions may not apply to you.

WARRANTY CONDITIONS:

1. This warranty does not cover:
 - a) minor conditions such as stains, scratches, water spots or burns which, due to the North Star Solid Surface's unique properties, may be corrected by techniques specified in the Care and Cleaning instructions.
 - b) defects caused by the failure to comply with the North Star Solid Surface Fabrication and Installation Guidelines or the Care and Cleaning Instructions or where the installation of material was made other than by a North Star Authorized Fabricator/Installer.
 - c) the costs of any repair or replacement not authorized by North Star Surfaces.
 - d) damage from heat generating appliances, user abuse, or any defects other than manufacturing defects.
 - e) any materials for purposes other than normal interior use as counter surfaces, wall cladding and custom furniture or other uses as approved by the manufacturer.
2. This warranty is voided by any unauthorized repairs.
3. This warranty is fully transferable.
4. Where North Star elects to repair, repairs shall be made as close to the original finish or color as reasonably possible, custom color match charges are at the expense of the purchaser and are not covered by this warranty.
5. This warranty is offered in conjunction with the warranty of the original Authorized Fabricator/Installer. In the event that this Authorized Fabricator/Installer is not available to provide the service required, the Company will not be responsible for any travel costs beyond those normally incurred, had the initial Authorized Fabricator/Installer been available (within a twenty-five (25) mile radius of their facility).

Any questions about this warranty should be addressed to:

WARRANTY CLAIMS PROCESSING PROCEDURES

To resolve warranty claims, we ask that our Distributor Representatives or Warranty Service Agents prepare a Warranty Claim Report. You can help us expedite the processing of warranty claims and achieve improved customer satisfaction by cooperating in the following areas:

1. **Warranty Claim Report Form:** Please fill this out completely so that information needed to make decision is readily available for us. This information helps us tremendously in claim processing.
2. **Quality Inspection Checklist:** We ask your assistance in completing this form in detail, as this helps us to identify how the defect occurred. Your help in this area in the past has led to the advanced fabrication procedures that now exist in the solid surface industry, further improving our industry's reputation.
- 3 **Job Layout:** Include a detailed diagram of the job, complete with all measurements, along with distances to seams and seam locations. This helps us to accurately estimate the cost of fabrication and material, thereby reducing error and allowing us to validate a repair/replacement quote.
4. **Photos:** Take four photographs of the defective area and a photograph of the overall kitchen. If the claim were in regards to a cracked sink, we would like a photo of the sink, although you may feel we cannot see the cracks. Also, in the case of surface cracking or warping, we would like a photo of the underside of the countertop showing the substrate.

5. **Quotation:** Submit a written quotation on the repair or replacement of the job, including materials required from KARADON to complete the job. Repair is encouraged over replacement. However, if repair is not possible, a quote of the replacement is needed. This quote should include labour and any required materials.
6. **Proof-of-Purchase Document:** We must have some form of "proof of purchase" on all warranty claims. This document could include a copy of a receipt, cancelled check, warranty card, etc. This document should include the date of purchase or install and the type of material used.

Warranty claims that are submitted with this information will be resolved in a timely manner. Without this information the processing of a claim will be delayed. We ask for your continued cooperation and we thank you for your assistance.



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