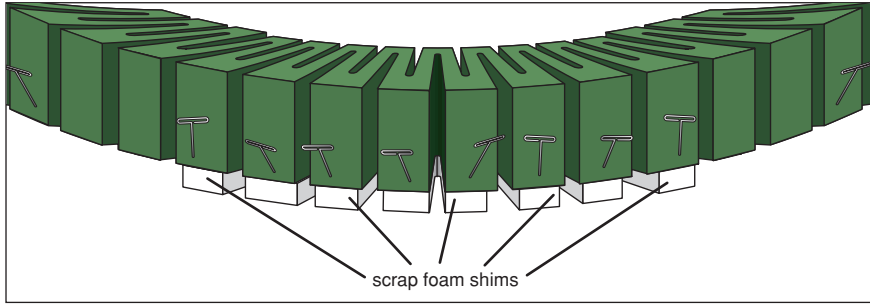


BANKING RISERS AND INCLINES/DECLINES

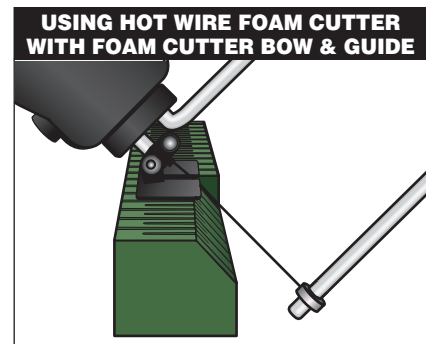
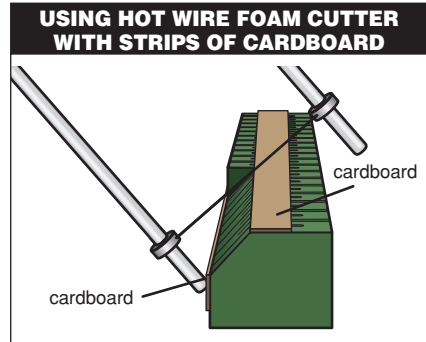
Real roads and railroads are often banked slightly on curves. Some modelers choose to bank their layout's roads and track to enhance realism. Insert shims under Risers or Inclines/Declines around the outside of curves. These shims will be glued in place after testing your layout.

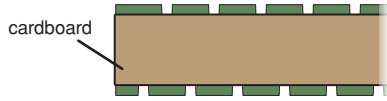


TRIMMING RISERS, INCLINE/DECLINE SETS AND STARTERS ONLINE VIDEO

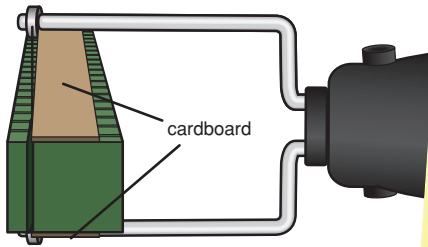
Trimming Risers and Inclines/Declines should not be necessary unless their position interferes with pre-existing landscape features, such as gullies or mountains. This should only occur if you are building on an existing layout, which already has terrain features installed. If it is a tight fit for a Riser, it is likely to be a tight fit for your train. Be sure to test before committing glue to the layout. However, if interference occurs, you do have some leeway to modify Risers and Incline/Decline Sets and Starters.

Risers and Inclines/Declines can also be beveled at the top to provide a narrower surface for laying track. This can be especially useful for N scale modelers and creating gullies and ditches along the track side. Cut bevels prior to installing foam. If you plan to do a lot of beveling, try the Bow & Guide. Attach the Bow & Guide to your Hot Wire Foam Cutter. Set the angle of the guide to the angle of the desired bevel.





Cut strips of cardboard 2" wide, or wider. Place down center of Riser.



NOTE: Due to the unique shape of SubTerrain foam components, if you cut the Riser or Incline/Decline down its center lengthwise, it will fall apart. The maximum you can cut off each side of a Riser or Incline/Decline is 1/4".

BUILD STREETS AND ROADS

A realistic layout needs streets and roads leading to the industries, towns and other buildings. Roads can have more dramatic grades and turn or bank more sharply than tracks. They can be included almost anywhere. If you want a steep incline leading directly into a deep decline, roads are where you can do this.

Building roads is easy. Use any combination of Risers, Incline/Decline Sets and Incline/Decline Starters in the same manner as they are used to support track. Place two Risers side-by-side to make wider roads if desired. If the roads on your layout bear no significant weight, they may be suspended and supported with pieces of scrap foam. If you are using Road Risers, use 2" Support Panels and Sticky Spots to elevate your roads. Later, streets and roads will be covered with Plaster Cloth and paved with the Road System (pages 93-100).

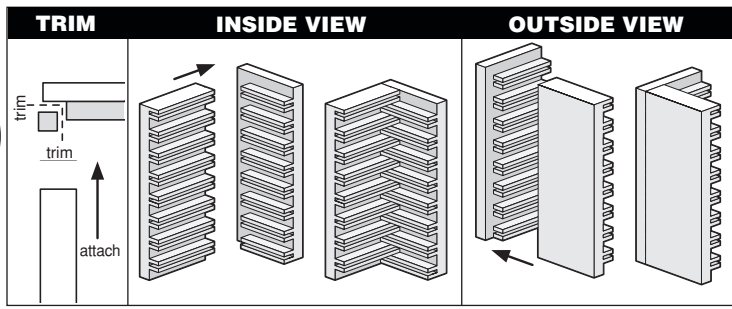
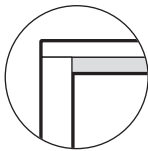


INSTALLING PROFILE BOARDS ONLINE VIDEO

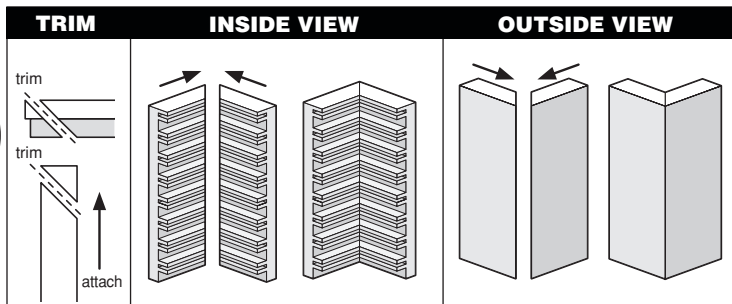
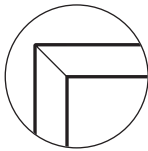
Profile Boards are designed to interlock at corners by turning the adjoining boards upside down. Pin the Profile Boards to the base with Foam Nails. For a seamless joint, the Profile Boards can be cut at a 45° angle (mitered) at the corner using the Hot Wire Foam Cutter with the Bow & Guide attachment. If your corners are not mitered, cut 1/2" x 1/2" strips from Profile Board scrap. Fill the void at each corner where the Profile Boards meet and trim to the height of each corner. You can also notch the corners of the Profile Boards for a flush fit.

Profile Boards may extend past the end of the base. If this happens, trim the end of the Profile Board with the Hot Wire Foam Cutter or Foam Knife. Use a straight edge to ensure a straight, square cut.

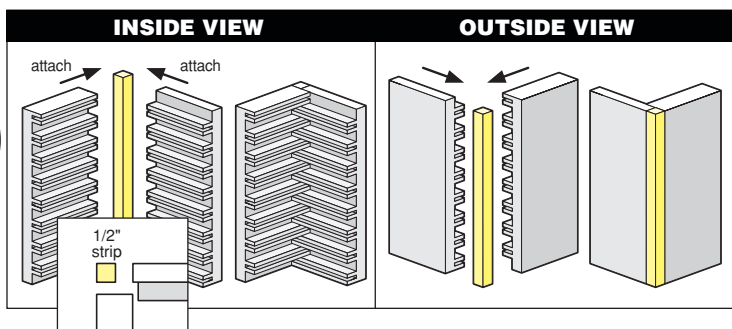
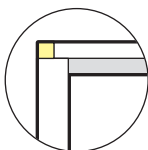
Notched Corner



Mitered Corner

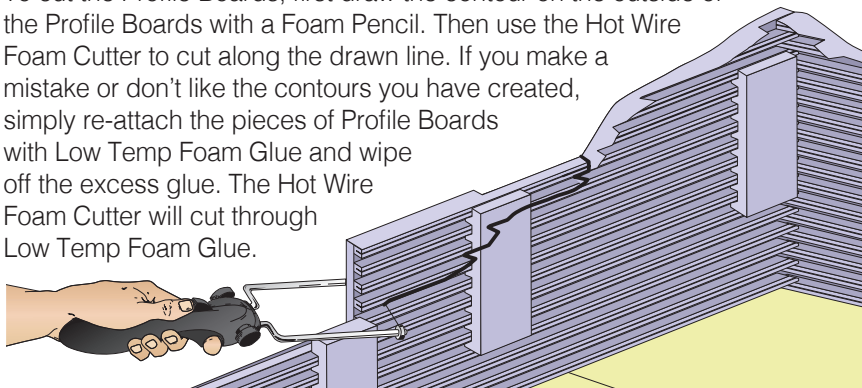


1/2" Strip Corner



CUT CONTOURS

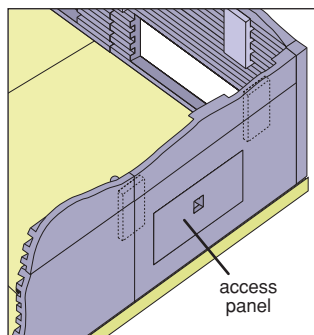
To cut the Profile Boards, first draw the contour on the outside of the Profile Boards with a Foam Pencil. Then use the Hot Wire Foam Cutter to cut along the drawn line. If you make a mistake or don't like the contours you have created, simply re-attach the pieces of Profile Boards with Low Temp Foam Glue and wipe off the excess glue. The Hot Wire Foam Cutter will cut through Low Temp Foam Glue.



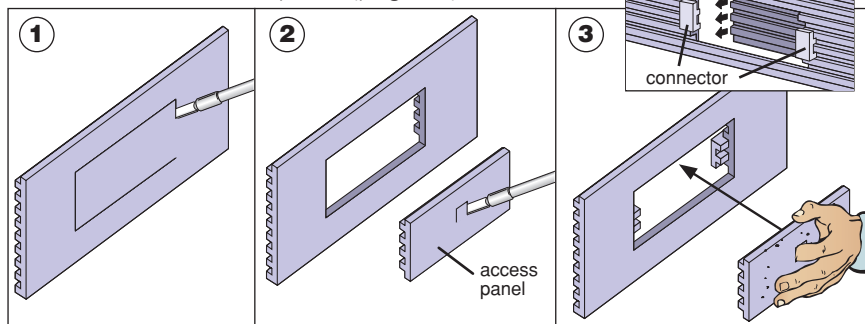
CREATE TUNNELS, OVERPASSES AND ELEVATED AREAS

ONLINE VIDEO

Tunnels are useful features on layouts because they create a view block where the train can disappear and reappear. Before creating a Tunnel, consider a couple of things. For cleaning and derailments, you need a way to access the track within your tunnel. The SubTerrain system makes creating this access easy because you can simply cut an access panel into a Profile Board that will allow you to reach into the tunnel. Plan to create access panels in your layout planning phase.



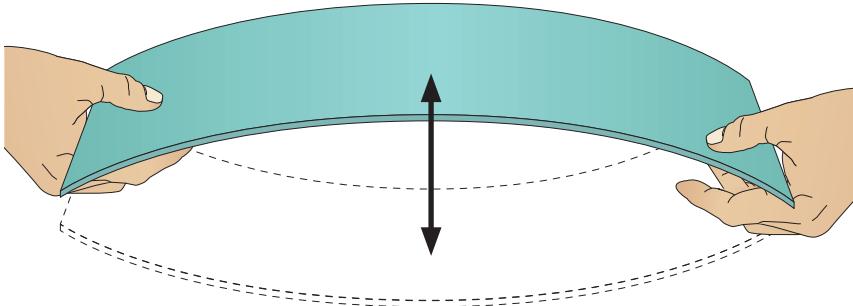
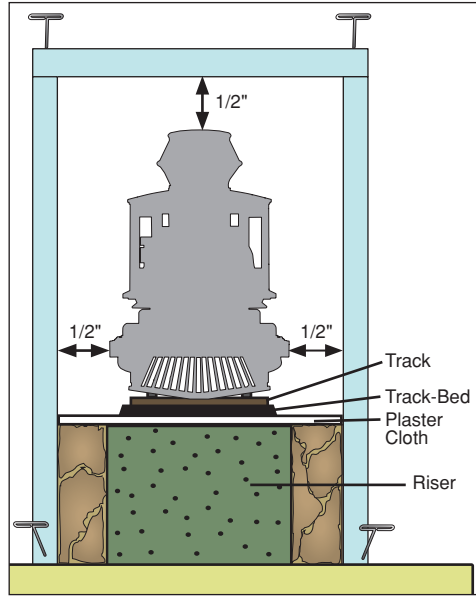
You can make tunnels out of Foam Sheets, Modeling Sheets, Tunnel Liner Form or Shaper Sheet. Using Shaper Sheet for terrain contours, like tunnels, will be discussed further in Chapter 2 (page 69).



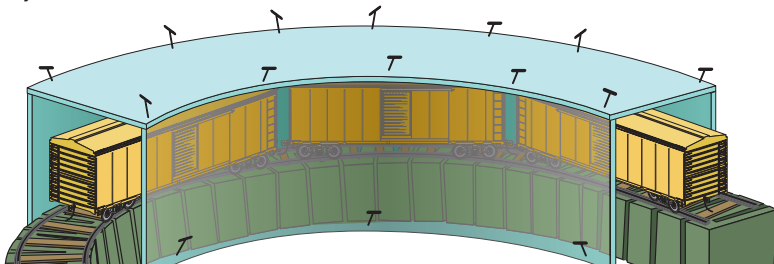
TUNNELS WITH FOAM SHEETS AND MODELING SHEETS

Cut Foam Sheets to form tunnel sides and ceilings. These will support terrain contours and keep the track area clear. Pin the foam in place with Foam Nails. To ensure adequate clearance between tunnel sides and track, place the walls at least 1/2" away from the Risers. Allow 1/2" in height for the track and Track-Bed (page 76) to be installed. Use scrap pieces of 1/2" foam as spacers.

If your tunnel curves, you will need to bend the tunnel wall, creating a vertical curved area. Cut a 1/4" Foam Sheet or any size Modeling Sheet to the desired height. Gently flex the foam back and forth. You will hear it "give" as you flex it. When testing your layout, check for clearance to make sure there are no problems when a train goes through the tunnel.



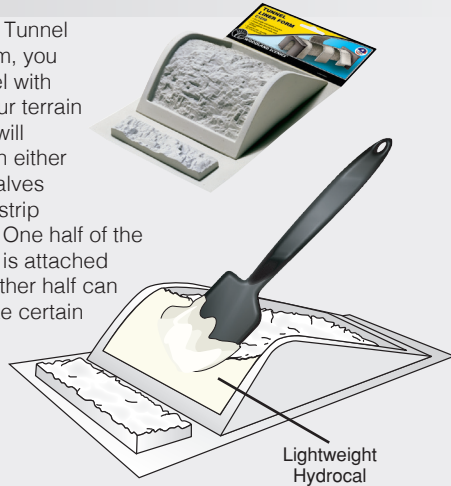
Before permanently attaching the tunnel sides and ceiling, you will need to install the track in areas covered by the tunnel. Chapter 2, Terrain, will cover installation of track in tunnels. Be sure to read ahead before you permanently install your track.



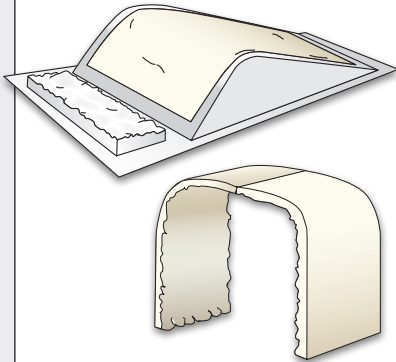
Product Overview

Tunnel Liner Form

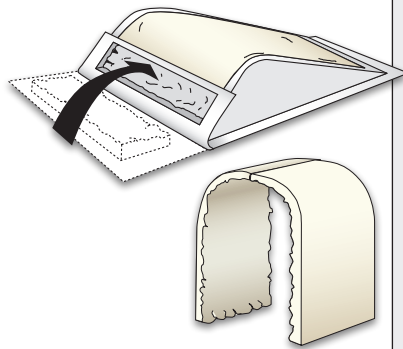
Another tunnel formation option is the Tunnel Liner Form. With the Tunnel Liner Form, you can create plaster castings of a tunnel with realistic texture that will blend with your terrain features. Each casting from the form will produce one half of a tunnel section in either single or double track width. These halves are then connected on the top with a strip of Plaster Cloth, which forms a hinge. One half of the tunnel will remain stationary. This half is attached directly to the terrain base while the other half can be raised for repairs to the track. Make certain you have a way to access the section of the tunnel that opens. Use the Tunnel Liner Form with Lightweight Hydrocal® Plaster, Shaper Sheet Plaster or Super Strength Plaster (pages 62-63).



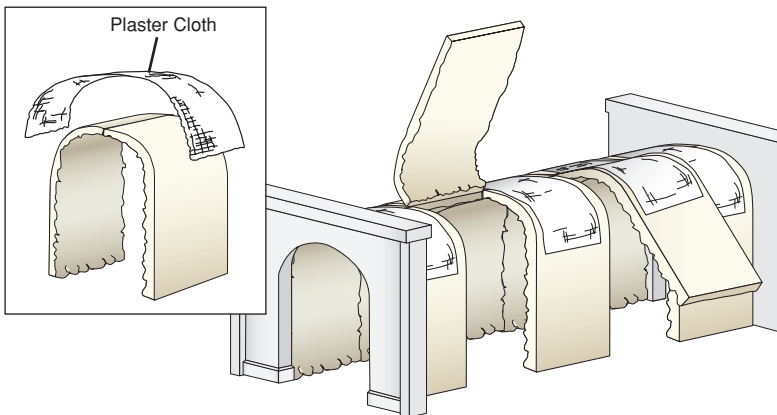
DOUBLE TRACK



SINGLE TRACK



Plaster Cloth

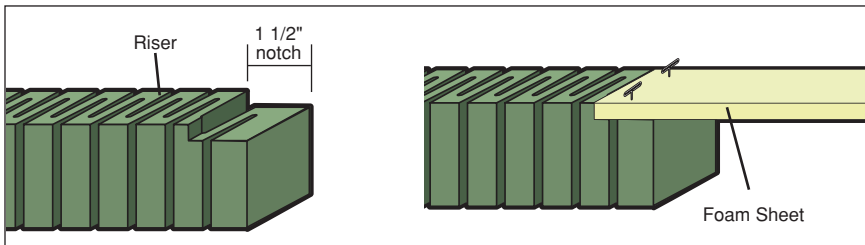
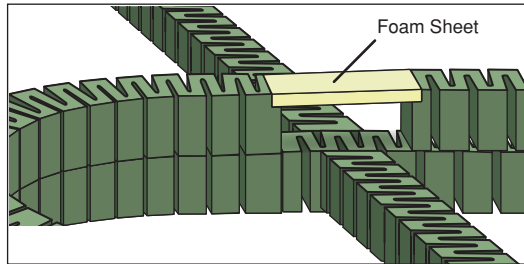


OVERPASSES

A layout may call for track or roads to pass over or under each other. If your layout calls for this kind of overpass, keep in mind that you will need adequate clearance both horizontally and vertically. The amount of clearance will depend upon the scale of your layout. Check trains or vehicles that will pass through. Inclines/Declines (4") are the ideal height for an HO scale layout overpass.

When creating an overpass it is important to adequately support the upper track or road. Use at least 1/2" Foam Sheets for the upper support. If the gap is large you may wish to use thicker foam for proper support. Cut a piece of Foam Sheet 2 1/2" wide (the width of a Riser) and 3" longer than the length of the opening.

Now cut notches in the tops of the Riser at either end of the overpass. These notches should be 1 1/2" long. Nestle the Foam Sheet into the opening on the Risers and pin in place.



BRIDGES

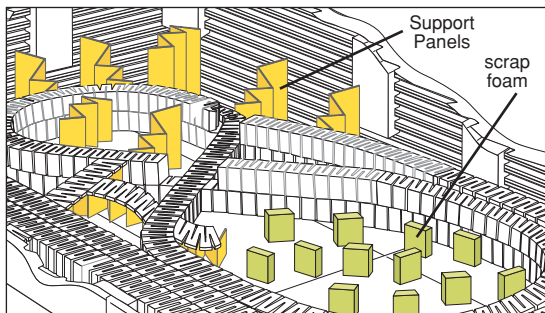
Bridges differ depending on model and manufacturer. Always review the bridge manufacturer's instructions before installation. Paint the bridge before installation. Once your bridge is painted, attach the bridge to Risers. If your bridge includes a track section as part of the bridge, attach it to the layout when you install the track. If your bridge has a flat deck on which track will be laid, it should be installed along with the Track-Bed (page 76).

Some bridges have a thinner or narrower area where the bridge is to be attached to the layout. Examine the underside of your bridge. Use a Foam Pencil to mark your layout where the bridge will rest, then place it on the layout. Double check the bridge's positioning and alignment. Check to be sure it is at the right elevation to meet your track and also is positioned correctly on each side where it connects to the layout. Notch the foam or install shims wherever necessary to make sure the bridge is placed correctly. When you are satisfied with the bridge's position, glue the bridge in place.

CREATE LEVEL ELEVATED AREAS

When creating towns and parking areas or placing buildings, you might want an elevated flat area. Decide where the area will be located and what shape it should be. If the elevated area must fit the contours of a Riser or other feature, trace the contour on a sheet of paper, then transfer the shape to a Foam Sheet. Cut the contour with a Hot Wire Foam Cutter or Foam Knife.

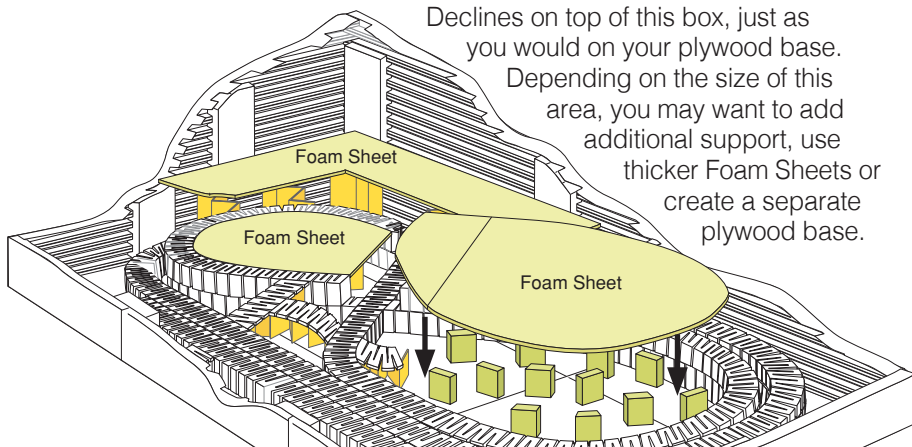
Support Panels can be cut to size and used under Foam Sheets to create elevated flat areas. You can also cut several small pieces of foam from scraps if you need a different height. Pin the foam in place to test the height of your supports.



It would also be possible to build a separate elevated area. Construct a "box" out of Foam Sheets to support this area. Place this box on your layout. Use Inclines/Declines to reach this elevated area. Install Risers and Inclines/Declines on top of this box, just as

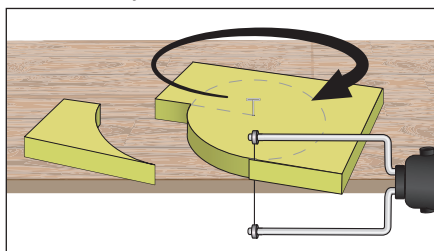
you would on your plywood base.

Depending on the size of this area, you may want to add additional support, use thicker Foam Sheets or create a separate plywood base.



CUTTING FOAM CIRCLES

It is easy to cut perfect circles from Foam Sheets with the Hot Wire Foam Cutter. Use a Foam Nail to pin a piece of foam to your work table. The Foam Nail should be the same distance from the edge of the table as the radius of your circle. Hold your Hot Wire Foam Cutter against the edge of the table and rotate the piece of foam around the Foam Nail. As the foam rotates, the Hot Wire Foam Cutter will cut a perfect circle.



TEST YOUR LAYOUT

Once all of the Risers and Inclines/Declines are firmly pinned in place, test your track. Lay the track sections directly on top of the SubTerrain Risers and Inclines/Declines. Pin track in place using Foam Nails. Stick Foam Nails in at an angle or push them all the way in to avoid interfering with your train.

Use rail joiners to mechanically and electrically join the track sections together. Be sure to use insulated rail joiners where appropriate to ensure proper wiring and current flow. Run wiring neatly down the sides of Risers and Inclines/Declines and along the base to the power supply. Connect all necessary wiring to the track, turnouts and power supply. Follow the wiring instructions for your track plan, power supply and turnouts, or review one of the many books on wiring available from your local hobby shop.

Now you can test-run your train. Check for derailling. Since Risers and Incline/Declines are not permanently installed, they can be removed, repositioned and re-pinned as necessary.

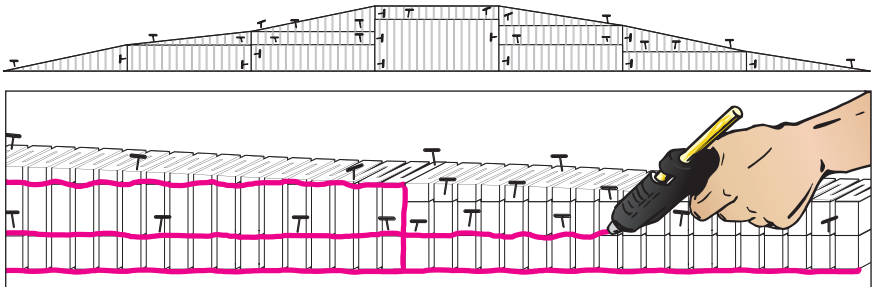
This is also a good time to be sure your engine will pull your train up steep grades. Check Risers and Inclines/Declines to be certain they are centered under the track and the track joints all fit together tightly. Adjust as needed.

ADHERING FOAM COMPONENTS ONLINE VIDEO

Once you are satisfied with how your understructure functions, it is time to permanently install the SubTerrain foam components.

USING LOW TEMP FOAM GLUE

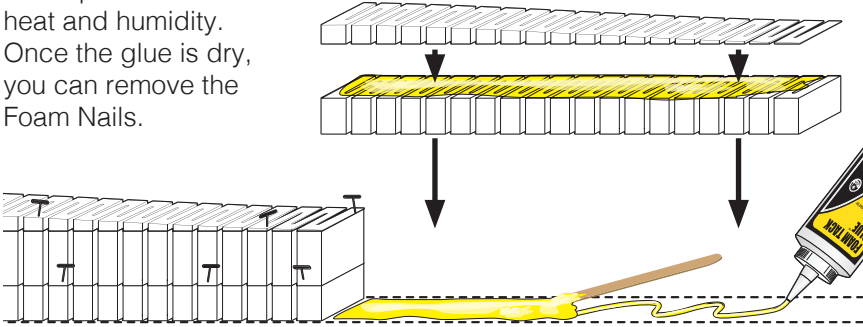
If you use Low Temp Foam Glue, run a bead of glue around where each foam component connects to the next one. This glue will set quickly. It is usually not necessary to move or disassemble your work in order to apply the glue. This technique will allow you to test your work and make changes as necessary before permanently gluing anything in place. You can also use Low Temp Foam Glue between sheets of foam, as well as between foam and other products. Remove Foam Nails once the glue is dry.



USING FOAM TACK GLUE

Foam Tack Glue must be spread on the surface of materials in order to adhere together, so you will have to take your work apart in order to apply the glue. This glue also sets more slowly than Low Temp Foam Glue, so you will want to use Foam Nails until the foam sets. Drying time will depend on the heat and humidity.

Once the glue is dry, you can remove the Foam Nails.



CONTACT CEMENT

Glue requires air to dry. If you spread Foam Tack Glue on a Foam Sheet and attempt to place another Foam Sheet over it, the glue will not dry in the center. When you are using Foam Tack Glue to adhere foam components, consider using it as contact cement. Using Foam Tack Glue as contact cement creates an instant bond between the foam components and allows large surfaces to be adhered to each other.

To use Foam Tack Glue as contact cement, spread an even layer of Foam Tack Glue on the two surfaces that will be glued together. Allow the Foam Tack Glue to dry until it is clear and tacky. The maximum working time is 1 hour. Once it is clear and tacky, align and press the components together. The glue will bond the two surfaces together almost instantly. Work in manageable sections. If the maximum working time is exceeded and the glue dries out, simply spread another layer over the first and start the process over. Always use this method when sandwiching large sections of Foam Sheets together.

PRE-ASSEMBLE RISERS AND INCLINES/DECLINES

Simplify installation of Incline/Decline Starters and Risers by pre-assembling sections. Start with the lowest section and work toward the highest. Stack Risers and Incline/Decline Starters to desired height. Glue these together with the Low Temp Foam Glue Gun, or Foam Tack Glue. Install these pre-assembled sections just as you would Incline/Decline Sets.

Chapter 2

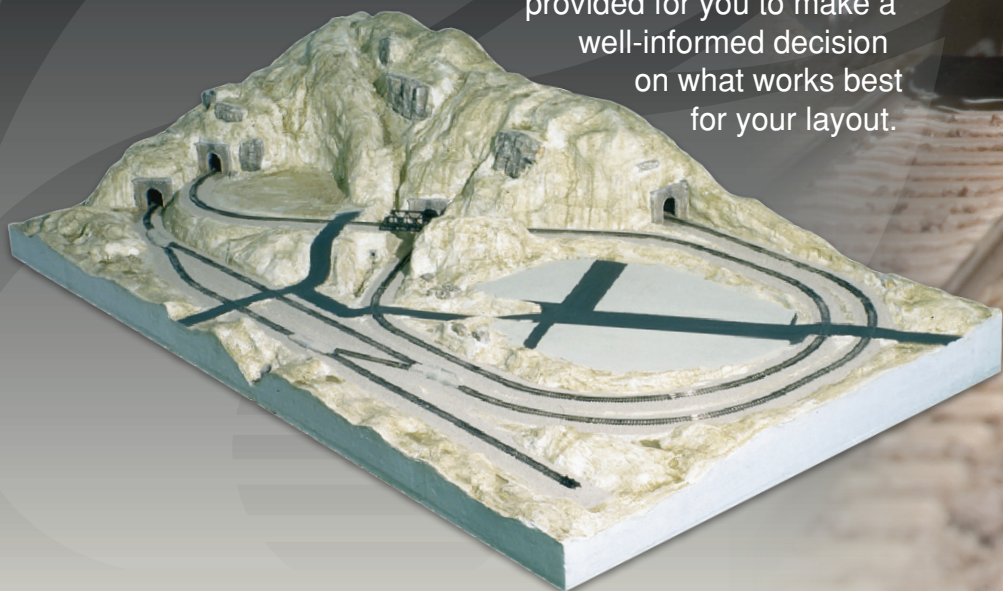
Terrain



Once the SubTerrain understructure of your layout is finished, the next step is to create the terrain shell. The terrain shell is the hard surface you will later paint, landscape and place details like structures or figures. To create the terrain shell, you will cover your SubTerrain with materials that form the physical features like mountains, hills and waterways. These physical features should reflect your original layout plan (pages 38-39).

In order to build your terrain, you must first determine what kind of shell you are going to have and how you want to build it. This will affect the materials you use. For example, if you are in a modular group or plan to present your layout at different shows, you may need a terrain shell that is lightweight for easy transport. On the other hand, if you plan to have a lot of structures and heavy features, you may need a terrain shell that is weight-bearing.

This chapter begins with introducing the different tools and plasters that will be used to build your terrain shell. Additional products that are not used throughout the chapter will be introduced as they are applied. Information about these tools and plasters, such as working time and strength, are provided for you to make a well-informed decision on what works best for your layout.





TERRAIN SYSTEM TOOLS

Product Overview

Plaster Cloth/Modeling Tray

The Plaster Cloth/Modeling Tray is made of durable non-stick silicone. The tray offers fast, easy cleanup and long-lasting use. It is perfect for dipping Plaster Cloth and pouring molds, plaster slabs and expansive rock walls. The Plaster Cloth/Modeling Tray includes side grips for easy lifting.



Plaster Mixing Set

Plaster Bowls and Spatula are fast and easy to clean, wet or dry! The Measuring Cup and Mixing Bowl are marked in both ounces and milliliters for easy measuring. The Plaster Mixing Set is made of durable silicone for continual use and easy cleanup, and the bowls are collapsible for easy storage.



Easy Rock Carving Tools

Use the Easy Rock Carving Tools with Carving Plaster to carve custom rock formations.

The Strata Tool helps you carve and shape large areas fast to model strata, blasted rock and other weathered and eroded outcrops.

The Carving Tool has two sides - a Chisel and a Pick. Use the Chisel to carve gouges and cavities. Use the Pick to carve grooves, fine-line abrasions and striation markings.

Keep your carving area free from debris with the Duster.

ONLINE VIDEO



COMPARING PLASTER CLOTH AND SHAPER SHEET®

Plaster Cloth and Shaper Sheet can be used to create many of the same things—just in different ways. Both are great options for not only creating the terrain shell for your layout but also school projects or arts and crafts. They can also be used together for exceptional results.

Product Overview

Plaster Cloth

Plaster Cloth is an easy and convenient method for modeling the terrain base and lightweight land contours. This plaster-coated cloth creates a durable, hard shell without needing additional plaster. It is designed to easily accept Earth Colors Liquid Pigment, paints, plaster castings and landscaping materials with realistic results. Plaster Cloth can also be used for blending and filling in gaps around rocks or terrain.



Plaster Cloth takes on the shape of the objects it covers, so a support structure is required to mold a landscape's contours. Creating understructure using wads of No-News Paper or Support Panels will be discussed later in the chapter (pages 65-66).

ONLINE VIDEO



Shaper Sheet®

Shaper Sheet is a unique material for modeling all types of terrain. It can also be used for backdrops and other dioramas. This strong, pliable sheet can be shaped and reshaped to create any level of detail and can hold its form without any understructure. Shaper Sheet is formulated to mechanically bond with plaster to create a thin, durable and hard shell that easily accepts Earth Colors Liquid Pigment (page 113) and landscaping material.



ONLINE VIDEO



CHOOSING YOUR PLASTER

Once you have decided between Plaster Cloth and Shaper Sheet for your terrain shell, the next step is to determine which plasters will be needed. These plasters will be used to create rocks, add texture to the terrain shell, smooth rough areas, fill gaps, carve rock faces, seal water areas and strengthen the terrain shell. The plaster you use for your layout is very important because not all plasters are the same. Some plasters are easy to carve, while others offer more strength or a longer working time. The plaster you choose will depend on your layout plans, and you may need to use more than one to create your model. The Plaster Comparison Chart can help you decide which plaster will fit your needs.

PLASTER COMPARISON CHART					
PLASTER SPECS	SUPER STRENGTH PLASTER	SHAPER SHEET PLASTER	LIGHTWEIGHT HYDROCAL PLASTER	CARVING PLASTER	MOLD-A-SCENE PLASTER
STRENGTH (1 = WEAK / 10 = STRONG)	10	8	5	4	2
WORKING TIME (1 = SHORT / 10 = LONG)	6	10	2	8	2
CURE TIME (1 = SLOW / 10 = FAST)	3	5	9	7	8
CURED WEIGHT (1 = HEAVY / 10 = LIGHT)	2	4	10	6	9
CARVABILITY (1 = HARD / 10 = SOFT)	1	3	6	10	8
CASTING DETAIL (1 = LOW / 10 = HIGH)	10	9	7	5	1

Product Overview

Super Strength Plaster™

Super Strength Plaster is a very heavy and very strong plaster that gives a lot of casting detail. If you have areas on your layout that need to bear weight, this would be the best plaster to use. This plaster also works well for outdoor plaster projects and statuary castings.



Shaper Sheet® Plaster

Shaper Sheet Plaster is designed to bond with Shaper Sheet. To create a permanent, hard surface with Shaper Sheet, just coat it with Shaper Sheet Plaster. This plaster is strong and has a long working time, which makes it great for large projects.

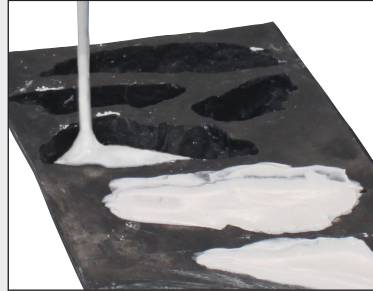


Lightweight Hydrocal®*

Lightweight Hydrocal is specially formulated for terrain modeling and castings. If you are concerned about adding weight to your layout, this plaster has a very light cure weight.

Lightweight Hydrocal makes it easy to cast rocks and works well with our rock molds. After you make the castings, you can use Lightweight Hydrocal to attach castings to your layout and fill in any gaps. Once it's dry, you can still carve it to add details or allow rock castings to fit together.

**Hydrocal is a U.S. Gypsum registered trademark.*



Carving Plaster™

Carving Plaster has an extended application time and is easy to carve once it's dry. Use this plaster to carve rock faces, bridge abutments, piers, and other terrain and structure formations. You can even use this plaster to create cobblestone or brick effects on your layout.

Try using our Easy Rock Carving Tools to carve custom rock formations quickly and easily. These tools will help you carve strata lines and blasted rock, as well as erosion or other rock formations.



Mold-A-Scene™ Plaster

Mold-A-Scene Plaster is a sculptable plaster that can be shaped like modeling clay using your hands or a trowel-like tool. This plaster is great for modeling barren and rocky terrain, especially desert and beach areas. It can also be used to repair holes and add detail. Use this plaster to build up the banks of a river, enhance a mountain or blend a raised railroad track into the terrain.

Mold-A-Scene does not need much coloration or landscaping to model a realistic desert, beach or other dry terrain. Simply mix it and spread it across your terrain contours for an instant dusty, sandy texture. Mold-A-Scene can also create smoother terrain. The more you knead it, the smoother it becomes.



MIXING PLASTERS

Each plaster is different, so be sure to follow package instructions. You can adjust the ratio of plaster and water to fit your needs. A general rule is that mixing plaster with less water (or more plaster) will result in a thicker plaster. Adding more water (or less plaster) will result in thinner plaster. Use thicker plaster when using it anywhere the plaster may run or drip, like when attaching plaster castings to your layout or joining sheets of Shaper Sheet. You can mix plaster to a paste-like consistency, which is useful when working in vertical areas. Please note that when you do mix thicker plaster, you will have less working time before it begins to set. Thinner plaster is best used in molds to cast objects, to fill in cracks or crevices and to seal water areas.



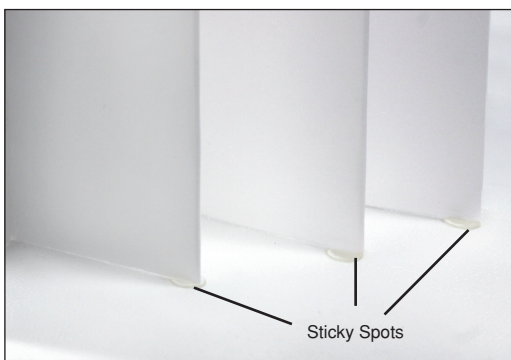
Make sure to clean your mixing bowl before and after each use. Any residual plaster flakes from a previous plaster batch can contaminate a freshly mixed batch and cause new castings to crumble. We recommend using the Plaster Mixing Set because each item has been designed to be easy to clean. To remove excess dried plaster, collapse the Mixing Bowl over a trash can. The dried plaster will pop out of the bowl easily. To finish cleaning the Mixing Bowl, wipe it with a damp towel. Wipe all tools with a damp paper towel until the plaster residue is gone. Remember to never rinse plaster down the drain (it will clog).

SUPPORT STRUCTURE AND BUILDING YOUR TERRAIN CONTOURS

A landscape's hard terrain shell typically needs a support structure, or understructure, to keep the shell elevated and intact. The products you choose for your support structure may vary from project to project depending on the size of your model, terrain shell product you are using (Plaster Cloth or Shaper Sheet), materials you already have on hand, cost and personal preference. Support Panels and paper wads are both excellent options for creating a support structure. When planning your support structure, remember to reference the layout plan to ensure you do not create contours in areas that you plan to put buildings, roads, railroad track, rivers or other features.

SUPPORT PANELS

The 4" Support Panels are great for building mountains quickly. Arrange Support Panels side-by-side in a diamond-shaped grid over the entire terrain area, leaving 1" space between the Panels. Tack each panel in place with Sticky Spots. Sticky Spots will hold the panels firmly in place while also allowing repositioning. To reposition a panel placed with Sticky Spots, lift the edge of the Sticky Spot and pull up slowly to release. Re-stick the panel wherever you like. To permanently secure Support Panels, leave Sticky Spots in place and run a bead of Low Temp Foam Glue or Foam Tack Glue around the bottom of the Support Panel.



We strongly recommend using the Hot Wire Foam Cutter to create height variation and contours. This will allow you to cut the panels freehand while they are positioned on your layout base—no removal or measuring required. However, you may want to cut the Support Panels to a specific height or create precise contours. To do so, collapse the Support Panel then mark the length of your highest desired terrain point on the Support Panel. Cut the Support Panel at the mark with the Hot Wire Foam Cutter, Foam Knife, scissors or a hobby knife. Reposition the panel on your layout and keep scrap pieces for later use. Use the scrap foam to build height back up if you cut a contour too low.

Product Overview

No-News Paper™

No-News Paper is a terrain-building material that is thicker than newspaper. No-News Paper's extra thickness offers more support and reduces the amount of paper needed to model. Unlike regular newspaper, No-News Paper keeps your hands clean and mess-free. It also comes in a roll that is easy to store. Building contours with No-News Paper wads is the quickest, easiest and least expensive way to build terrain regardless of skill level. No-News Paper can be used interchangeably with newspaper. For the purpose of this manual, we will reference both as "paper" and "paper wads."

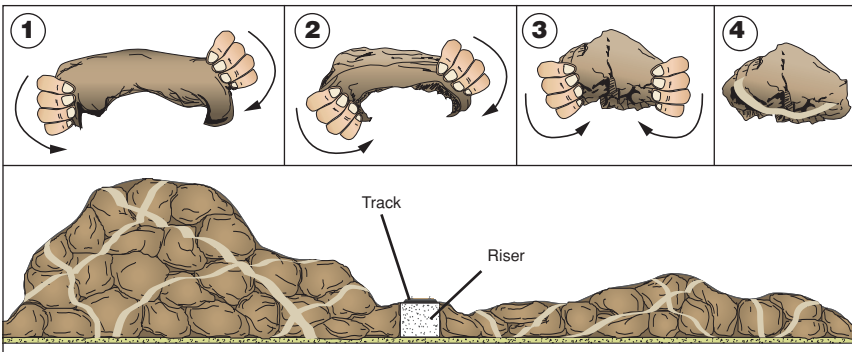


FORMING PAPER WADS

Forming mountainous contours with paper wads is simple. First, curl the edges of a sheet of paper underneath itself toward the center of the sheet. Keep curling toward the center until the paper forms a pillow shape. The pillow should have a gently curved top, slightly concave bottom and rounded edges. This will allow the pillows to fit together neatly and provide a smooth upper surface for laying Plaster Cloth. If needed, secure the pillow shape with masking tape and set aside.

Keep making paper wads. Once you have a pile of paper wads, stack them on your layout. Move them around to experiment with contours in different areas. Secure them in place with masking tape. Keep adding, moving or removing paper wads until you have the desired terrain contours.

If you have trouble visualizing these mounds as terrain features, place a single sheet of paper over the paper wads and use the Scenic Sprayer to wet the sheet down with a fine mist of water. The paper sheet will conform to the shape that has been created and provide a better idea of how the contours will look once they are covered with Plaster Cloth.



PLASTER CLOTH TECHNIQUES

Plaster Cloth is unique because when it is wet, it will mold itself and adhere to the shape it is applied to. For this reason, it will always need an understructure like paper wads or Support Panels. After Plaster Cloth dries, it becomes a self-supporting hard shell that can be cut into or have its understructure removed without losing its form. This quality is ideal for beginning modelers who may need to re-shape terrain features. It is also perfect for crafters. Some projects, like masks, need to be formed over an object that can be removed after the Plaster Cloth has dried.

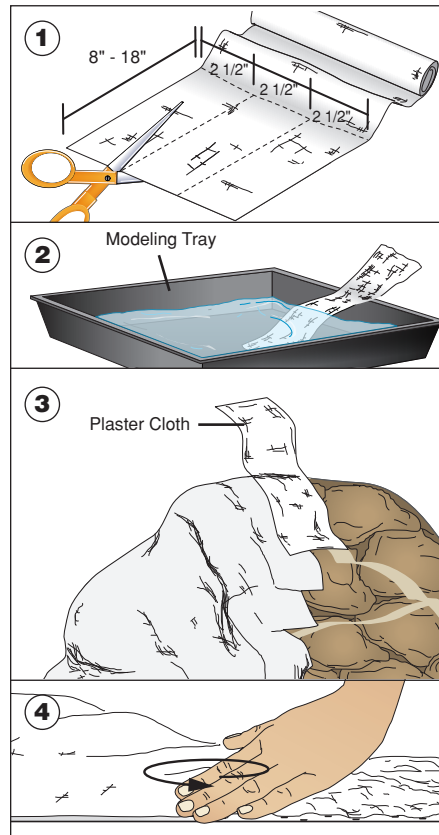
There are two ways to wet Plaster Cloth for application—the Dip Method or the Spray Method. Choose the method that suits your project.

PLASTER CLOTH WITH SUPPORT PANELS

When using Plaster Cloth with Support Panels, place a layer of thick paper across the terrain contours before applying the Plaster Cloth. The paper will prevent the Plaster Cloth from drooping between Support Panels.

DIP METHOD

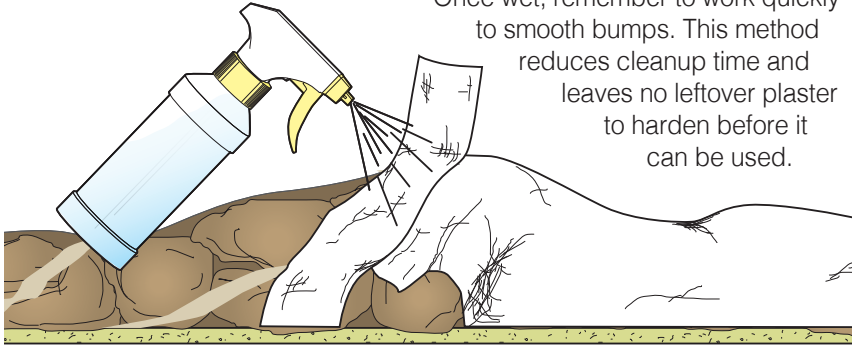
Start by cutting Plaster Cloth into approximately 2 1/2" wide strips approximately 8-18" long. Smaller strips are more manageable for beginners. Larger strips are more expedient. To apply strips to the layout, dip a strip into a pan of water (about 1" deep), then quickly place the wet strip on your layout, bumpy side up. Do not allow Plaster Cloth to sit in the water. With wet fingertips, smooth the bumps so that the holes in the Plaster Cloth fill in completely. Smooth the bumps on each strip before adding the next. Plaster Cloth will begin to harden within minutes of coming in contact with water, so work quickly. Overlap each strip with the next by 50%. When applied in this manner, you will have two layers of Plaster Cloth over the entire layout with no overlapping seams. This method will produce a very strong covering for your layout without requiring additional plaster or other bonding materials.



SPRAY METHOD

To apply Plaster Cloth with the spray method, lay dry pieces of Plaster Cloth on paper wads, Profile Boards, Risers, or Support Panels. Then use the Scenic Sprayer (page 104) to mist the Plaster Cloth with water. Lay one strip, spray it with water, smooth the bumps and then lay another. Overlap strips.

Once wet, remember to work quickly to smooth bumps. This method reduces cleanup time and leaves no leftover plaster to harden before it can be used.



FLAT AREAS

Wrinkles will occur due to the nature of Plaster Cloth. This adds character to terrain. However, wrinkles can cause problems if they occur in areas that should be flat, like parking lots or underneath track. To prevent wrinkles, butt ends of Plaster Cloth sections without overlapping the edges. Smooth bumps, wrinkles or folds immediately when the Plaster Cloth is still wet. After it is dry, sand to remove any rough spots.

DRY TIME

Dry time depends upon the thickness of application, heat and humidity. Plaster Cloth typically hardens into a firm shell in 30 minutes or less, but it is not necessarily dry. Let Plaster Cloth dry four to six hours before coloring or applying landscaping materials. For tough durable terrain, let it harden overnight. To expedite the drying process, you can aim a fan and/or heat lamp at the layout. Wet Plaster Cloth will feel cool to the touch and look a little off-white. Dry Plaster Cloth will appear bright white and be room temperature.

STRENGTHENING THE TERRAIN SHELL

To strengthen the Plaster Cloth shell, apply an additional layer of Plaster Cloth or brush on a coat of Shaper Sheet Plaster or Super Strength Plaster. Add a layer of plaster in areas where the holes weren't filled to prevent leakage when pouring the water base (page 174) for your water feature. Be sure to mist the dry shell with water before applying more Plaster Cloth or plaster. This will ensure the plaster bonds to the dry shell.

SHAPER SHEET TECHNIQUES

Modeling with Shaper Sheet is very different than Plaster Cloth because, in most applications, Shaper Sheet is self-supporting. Some applications need Shaper Sheet to remain flexible and do not require plaster, while others must be completed with plaster to ensure the Shaper Sheet holds its shape permanently. These easy techniques will describe how to use Shaper Sheet with and without plaster.

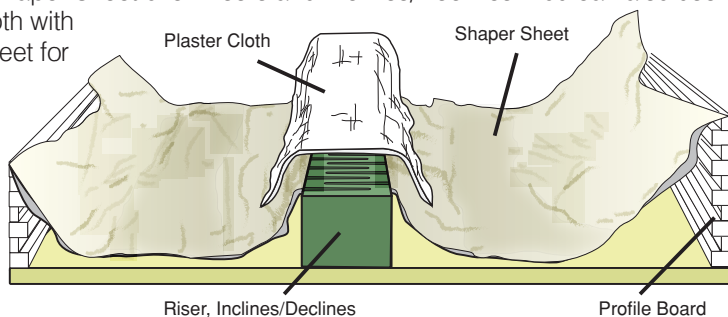
The white felt-like side, fiber mesh, of the Shaper Sheet is the side you want facing up on your layout. You can apply plaster and landscaping items to the fiber mesh. The shaper foil side is the underside of the Shaper Sheet and is typically not exposed in finished projects. However, some modelers do choose to flip Shaper Sheet and use the shaper foil as a smooth surface to paint (use enamel paint and/or lightly sand the foil before applying paint). There is also a layer of adhesive on the shaper foil beneath the fiber mesh. For our purposes, we will be discussing modeling on the fiber mesh, not the shaper foil.



FORMING TERRAIN CONTOURS

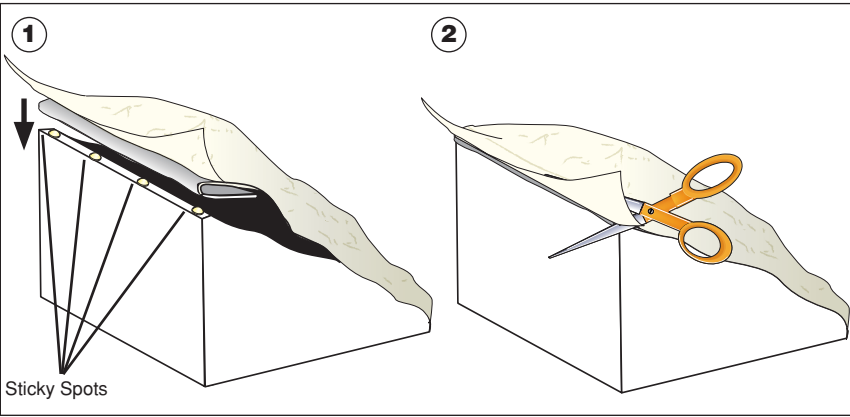
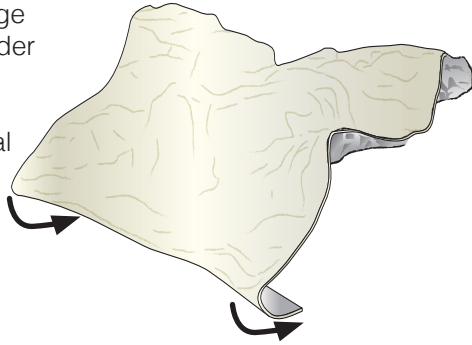
Shaper Sheet is incredibly versatile. The pliable material can be folded, scrunched, twisted, etc. When it moves, Shaper Sheet begins to form wrinkles both on the shaper foil side and the fiber mesh side. The wrinkles in the fiber mesh will create texture and contours for your project, as well as strengthen it. When modeling terrain, the wrinkles create appealing and realistic terrain variations. Manipulate the Shaper Sheet until your free-form object or terrain contours are how you like them. Use Foam Nails or Sticky Spots to tack down one side of large sections of Shaper Sheet while you shape it. This will make it easier to handle.

It is easier to add wrinkles than remove them, so if you want to make a flat surface, don't bend, fold or scrunch the Shaper Sheet. For example, when installing Shaper Sheet over Risers and Inclines/Declines. You can also use Plaster Cloth with Shaper Sheet for flat areas.

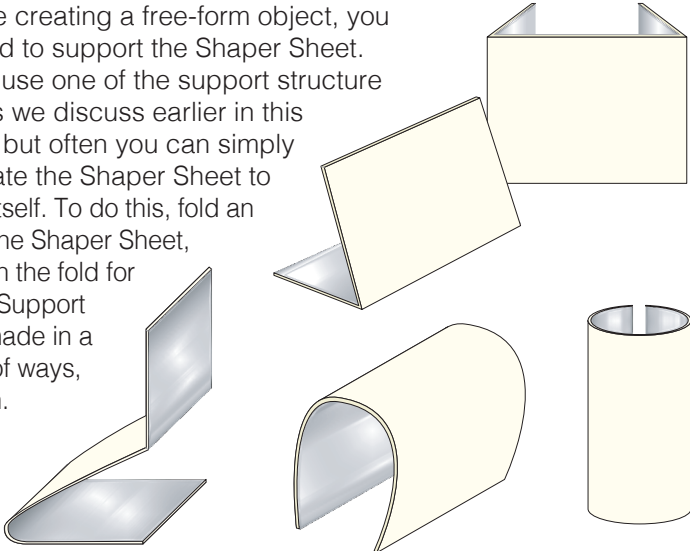


A STRONG CLEAN EDGE

Free-standing terrain features are strengthened when the outer edge of the Shaper Sheet is folded under itself, shaper foil to shaper foil. Make the fold at least one to two inches wide, or wider if additional strength is needed. Fold all edges under. Once folded, no shaper foil will be visible, only the fiber mesh.



If you are creating a free-form object, you may need to support the Shaper Sheet. You can use one of the support structure materials we discuss earlier in this chapter, but often you can simply manipulate the Shaper Sheet to support itself. To do this, fold an edge of the Shaper Sheet, then open the fold for support. Support can be made in a number of ways, as shown.

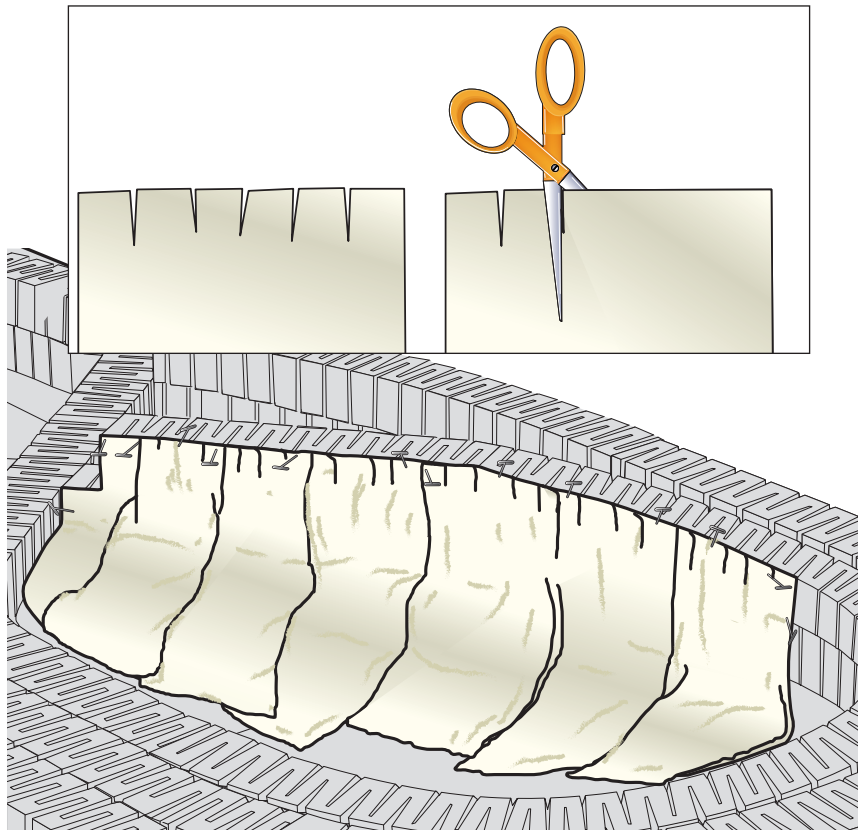


THE RIGHT SIZE

Shaper Sheet is very different than Plaster Cloth because Shaper Sheet does not conform to shapes you create with paper wads or Support Panels. Rather, it becomes the shape you create with it. This is very important to understand when considering what size of sheet you need to create the project you want.

Consider the rough shape of your project before you begin to cut into the Shaper Sheet. Measure the area it will cover, then roughly shape your terrain features. Always cut the Shaper Sheet slightly larger than the project area to compensate for the contours that are formed while shaping. Cut Shaper Sheet to size with scissors.

You do not have to use a whole sheet of Shaper Sheet as is. Create contours around tight curves by cutting a sheet into small sections. Pin the sections in place temporarily with Foam Nails. You can even cut relief notches in edges of sheets to allow the sheet to flex when wrapped around tight curves. Then, permanently join the sections using Option 3 as noted in the Connecting Sheets section (see page 72). Remove the Foam Nails as you apply plaster.

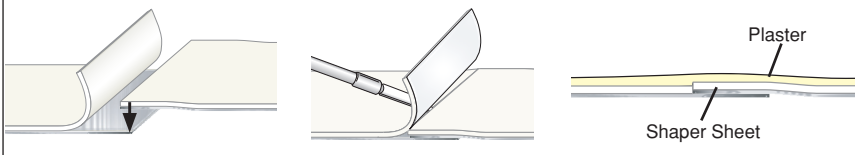


CONNECTING SHEETS

Connecting flat sections of Shaper Sheet together allows modelers to create long spans and large projects. Join pieces together until you have the size you need. Large expanses will likely need an understructure. Support Panels are recommended for the support structure because they are tidy and can be temporarily placed. If the expanse will bear any significant weight, plaster is recommended to lock the contours in place (page 73). You have three options when joining sheets or sections together:

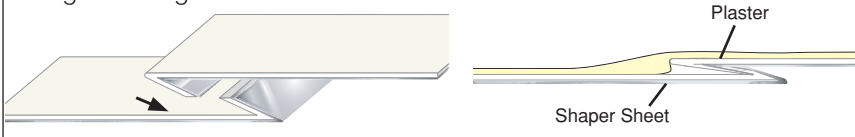
Option 1 - Peel

Take one sheet and peel the fiber mesh away from the shaper foil about 1" to expose the tacky surface. Be sure to pull the gauze backing, as well. Press the joining Shaper Sheet on the tacky surface. Then, cut away excess fiber or fold it over the seam. This method works if you are joining sheets that won't be plastered or when you need a seamless transition.



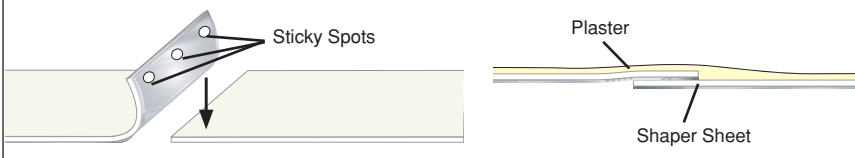
Option 2 - Fold

Fold the edges of the two sheets as shown below. Flatten the two sheets together at the fold and apply a layer of Shaper Sheet Plaster to ensure a good bond and prevent a seam from showing. This method creates the strongest bond between sheets and is best to use in areas that will be weight bearing.



Option 3 - Overlap

Overlap two sheets, both with the fiber mesh facing up. Apply a layer of Shaper Sheet Plaster to cover the seam and permanently join the sections. This method is ideal to permanently join small sections of Shaper Sheet together. If needed, use Sticky Spots to hold the sheets in place while



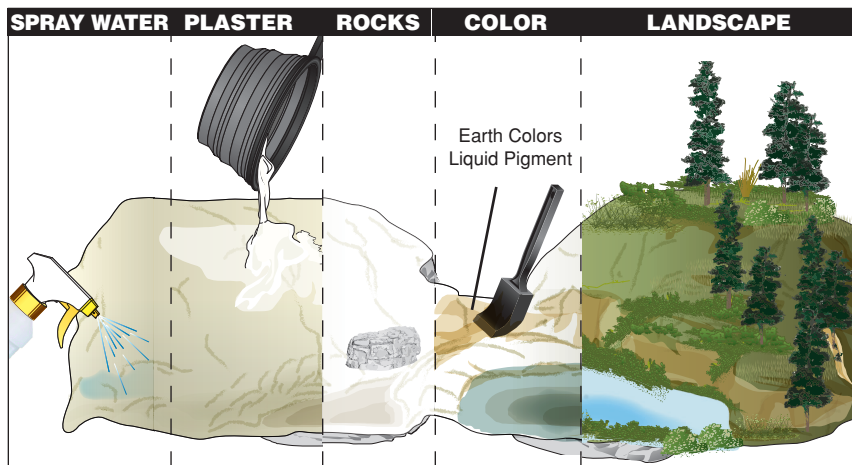
applying plaster. Apply Sticky Spots to the shaper foil before pressing it to the bottom sheet's fiber mesh. Sticky Spots will grab the fiber mesh for a temporary hold. Sticky Spots do not need to be removed before plaster application. You can also use Sticky Spots to adhere the Foam Sheets to Profile Boards or other SubTerrain foam components.

USING SHAPER SHEET WITH PLASTER

For projects that are permanent, very large, uniquely shaped or support objects of significant weight, we recommend using Shaper Sheet Plaster to coat the Shaper Sheet. Any Woodland plaster, or Plaster Cloth, can be used on Shaper Sheet for different results. However, Shaper Sheet Plaster is specifically designed to be super strong, have a long working time and mechanically bond with Shaper Sheet's fiber mesh to create a hard and permanent shell. This bond allows many Shaper Sheet models to stand freely without an understructure or with very minimal support.

Form the terrain contours with Shaper Sheet. Then prepare your Shaper Sheet Plaster with the Plaster Mixing Set. Spray the Shaper Sheet's white fiber mesh with water. Use the Plaster Brush Set to brush plaster on the Shaper Sheet. In flat areas, simply pour the plaster onto the Shaper Sheet and spread as needed. Use a thicker plaster when joining Shaper Sheet sections or in areas where the plaster may run. Let it dry before applying paint or landscape items directly to the Shaper Sheet Plaster surface (see Chapter 3).

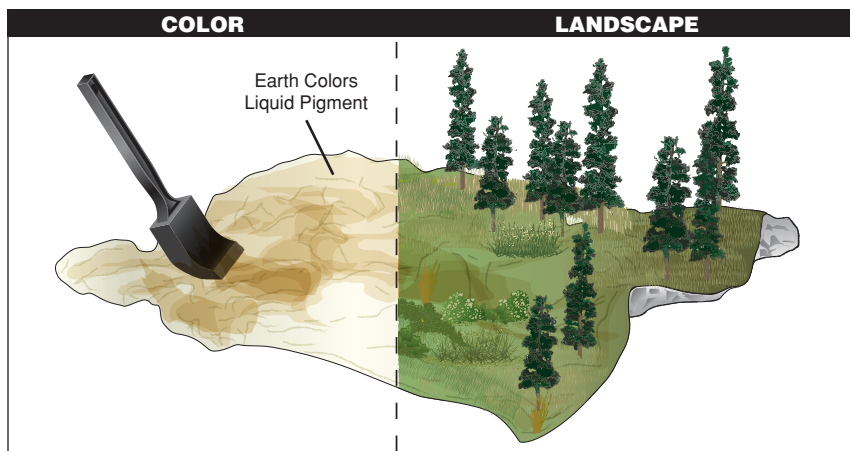
Once coated with plaster, Shaper Sheet is not easy to cut into with a regular hobby knife. Plan large features or rock faces in advance so you don't have to cut into the terrain contours to make adjustments for fit. If you must cut into Shaper Sheet after plaster is applied, use a serrated blade.



USING SHAPER SHEET WITHOUT PLASTER

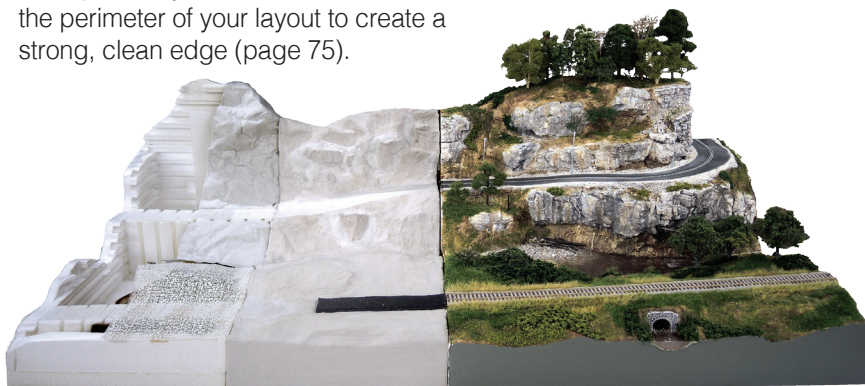
Using Shaper Sheet without plaster is ideal for modelers who want a lightweight building material that is mobile, adjustable, quick to form and does not require plaster.

Create the form you want with Shaper Sheet as described previously. Once all the contours are shaped, you are ready to landscape or decorate the Shaper Sheet. The fiber mesh is compatible with Earth Colors Liquid Pigment and Woodland landscape materials (see Chapter 3). When pigments are applied directly to the fiber mesh, it creates realistically textured terrain. Attach trees, turf and bushes directly to the Shaper Sheet fiber mesh with Scenic Glue or Foam Tack Glue.



INSTALL TERRAIN

Now that you understand the tools you need to create terrain shell, it is time for installation. Following your layout plan, install the understructure for Plaster Cloth (page 67) or begin shaping the Shaper Sheet (page 69). Once you have the desired contours, apply your plaster materials (pages 61-64). Once your terrain shell has dried, cover the perimeter of your layout to create a strong, clean edge (page 75).



COVER PERIMETER

Give your layout a finished look by covering the exterior surface of the Profile Boards with Plaster Cloth or Flex Paste. This layer will strengthen your layout and provide a clean surface for painting. Once your perimeter is covered, allow your layout to dry before moving ahead with construction. Take this time to plan ahead for the next construction steps, such as installing rocks, roadbed, Tunnel Portals, Culverts and pavement for roads.

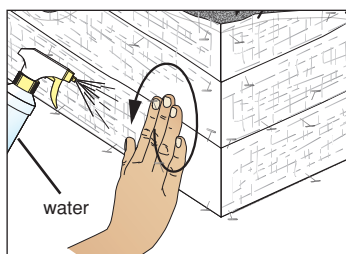
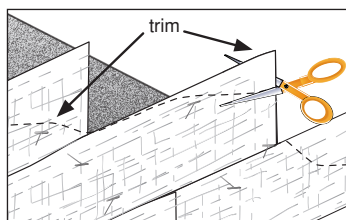
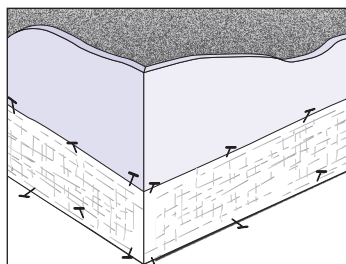
After the Plaster Cloth or Flex Paste has dried and all landscaping and scenery are in place, paint the perimeter with a flat, dark-colored paint for a clean finish.

PLASTER CLOTH PERIMETER

Use Foam Nails to pin dry Plaster Cloth to the outside perimeter of your layout. Pin the Plaster Cloth from the bottom up and do not overlap the sheets to prevent bumps and ridges from forming. Trim the Plaster Cloth so about one inch can be folded over the top edge of your layout. This will provide a smooth, strong upper edge.

Fold the extra over the top of the layout. Then, use the Scenic Sprayer to spray water on the Plaster Cloth in sections. Fill the holes in the Plaster Cloth and work quickly. Smooth the folded edge on top of the layout so that it blends with the terrain shell.

Once dry, fill any visible gaps between Plaster Cloth sheets with a light coat of your choice of Woodland Scenics plaster or Smooth-It (page 93). Use a fine-grade sandpaper to smooth any visible joints where Plaster Cloth is overlapped. Wipe with a clean, damp cloth to remove dust during and after sanding.



FLEX PASTE PERIMETER

Covering the perimeter with Flex Paste is as easy as dipping a brush into the Flex Paste bottle and brushing it on the Profile Boards. Once dry, Flex Paste will remain slightly flexible but will also create a firm shell that helps support your layout. Brush strokes may remain after the Flex Paste has dried. To remove the appearance of brush strokes, sand the Flex Paste surface with fine-grade sandpaper before painting.

You can also use Flex Paste to create a textured exterior. Use a roller brush and roll the Flex Paste over the Profile Boards for an instant, textured look.

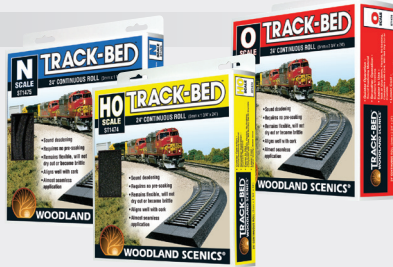
TRACK-BED (ROADBED) ONLINE VIDEO

The material that is put directly under the track is called roadbed. Track must be securely fastened down to this material so that it does not move when trains run. Keep in mind that train motors and wheels are noisy and that a proper roadbed material can help deaden their sound.

Product Overview

Track-Bed

We recommend our revolutionary Woodland Scenics Track-Bed, available in N, HO and O scales. It was awarded the National Model Railroad Association Conformance Seal. Track-Bed Strips, Rolls, Sheets and Super Sheets all feature the same qualities:



- **Quieter Operation** - with sound-deadening material
- **Smoother Operation** - with vibration-cushioning material that gives your train a smoother ride
- **Easy To Use** - flexible, compatible with cork, won't dry out or crumble and requires no soaking
- **Better Value** - high quality, lower cost



ROLLS

STRIPS

SHEETS

SUPER SHEETS

TRACK-BED	N SCALE	HO SCALE	O SCALE
ROLLS	1/8" x 1 1/4" x 24' (3mm x 3.17cm x 7.31m)	3/16" x 1 3/4" x 24' (5mm x 4.44cm x 7.31m)	3/16" x 2 3/4" x 24' (5mm x 6.98cm x 7.31m)
STRIPS	1/8" x 1 1/4" x 24" (3mm x 3.17cm x 60.9cm)	3/16" x 1 3/4" x 24" (5mm x 4.44cm x 60.9cm)	3/16" x 2 3/4" x 24" (5mm x 6.98cm x 60.9cm)
SHEETS	1/8" x 3 1/4" x 24" (3mm x 8.25cm x 60.9cm)	3/16" x 5" x 24" (5mm x 12.7cm x 60.9cm)	3/16" x 5" x 24" (5mm x 12.7cm x 60.9cm)
SUPER SHEETS	1/8" x 12" x 24" (3mm x 30.4cm x 60.9cm)	3/16" x 12" x 24" (5mm x 30.4cm x 60.9cm)	3/16" x 12" x 24" (5mm x 30.4cm x 60.9cm)

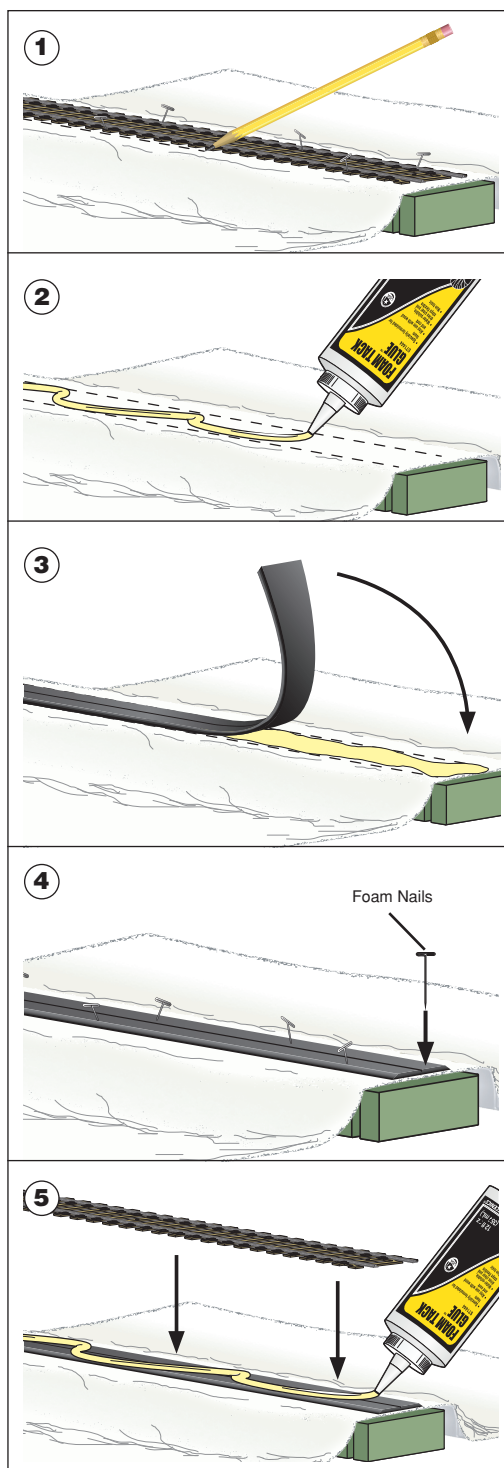
INSTALLING TRACK-BED

Once the plaster shell is dry, lay the track and pin it in place with Foam Nails. This is a good time to test the track for any clearance or derailing problems. You can sand rough patches if they are causing train malfunctions, but installing Track-Bed will correct most of these problems. Other roadbed products are not as resilient and may make these rough areas worse. To sand the rough areas smooth, start with 120-grit sandpaper. Then follow with 220-grit. Wipe the area with a damp cloth after each sanding to remove dust.

(1) Once you are satisfied with the track placement, trace the outline onto the plaster shell and remove the track.

(2) Track-Bed can be glued to most bases using Foam Tack Glue. **(3)** Spread a thin layer of Foam Tack Glue on the plaster shell, then **(4)** pin the Track-Bed in place while the glue dries. **(5)** When dry, remove Foam Nails and install track on Track-Bed.

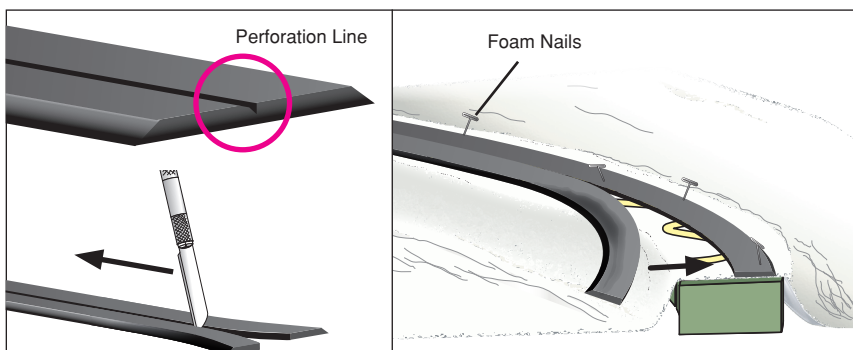
You can also use Foam Tack Glue as contact cement. Spread a thin layer of Foam Tack Glue on both surfaces and let it dry approximately one hour until it is clear and tacky. Press the Track-Bed in place; the glue will bond instantly.



Creating Curves with Track-Bed

Laying Track-Bed around curves is simple. There is a perforation in Track-Bed Strips and Rolls. The perforation allows you to easily separate the outer radius from the inner radius and adjust each independently. Score the Track-Bed along the perforation line with a hobby knife and separate the strips. Then, use the contact method described previously to adhere the strips to your layout.

Remember with the contact method, you need to be precise as the glue bonds instantly. Do not install a whole piece at once. Instead, tack one end of a strip down then, in increments, roll the Track-Bed into place on the curve. Press the Track-Bed to the layout every couple inches. Laying Track-Bed incrementally will allow you to control how the Track-Bed is laid and ensure a smooth curve.



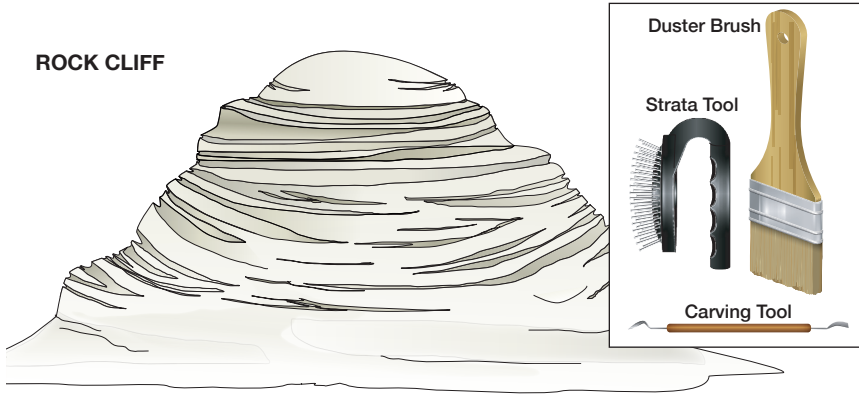
ROCKS

The next step for building terrain is to install rocks. Rocks in the natural world vary widely in color, shape and texture depending on how they were formed (igneous, sedimentary or metamorphic). Granite, for example, is an igneous rock and tends to be spotted with colors that vary from pink to green. Sandstone, however, is a sedimentary rock that has visible strata (layers) in different colors ranging from grey to light tan or red. Research the rock formations found in the area you are modeling. This will help you decide which colors and shapes of rocks you want on your layout and which product will suit your needs.

There are many ways to add rocks to your terrain. You can carve rocks directly on the terrain shell, create your own rocks with Rock Molds, use pre-made Ready Rocks or make your own rock molds with Latex Rubber. Installation methods are included at the end of this section, and Chapter 3 will address how to color rocks.

CARVING PLASTER ONLINE VIDEO

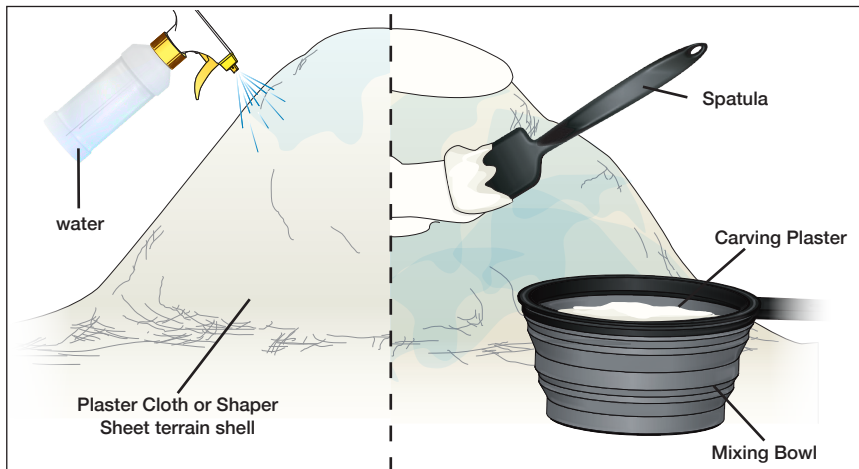
Carving Plaster allows you to carve any object directly onto a hard shell made of Plaster Cloth or Shaper Sheet. With Carving Plaster and Easy Rock Carving tools, you can carve a rock cliff, cobblestone street or boulders directly onto the layout's terrain contours. This is the easiest and fastest way to create large, textured expanses while also maintaining artistic control over the outcome.



Mixing and Applying Carving Plaster

Mix Carving Plaster according to the package instructions. Then apply it to a Shaper Sheet or Plaster Cloth base. Apply Carving Plaster in layers a minimum of 1/4" thick. Mist the plaster terrain shell with water before application for the best adhesion between the hard shell terrain and wet plaster.

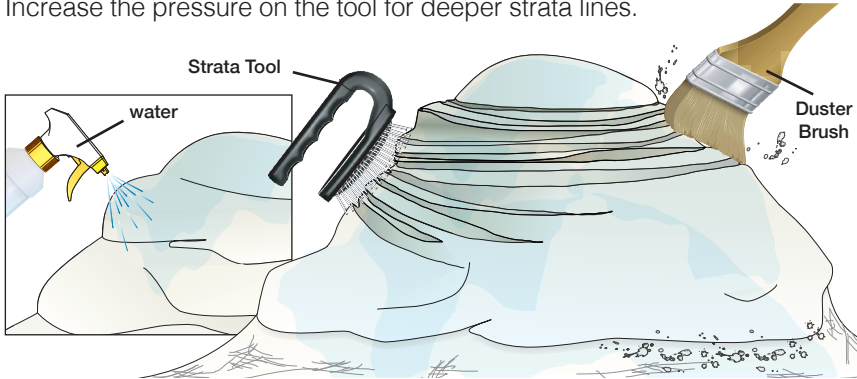
Spread Carving Plaster on the terrain shell. Apply thick layers for deep, realistic strata lines. Apply in mounds for large boulders and rock shelves. Allow Carving Plaster to dry 24 hours before carving. More Carving Plaster can be added at any time if you make a mistake or need additional plaster.



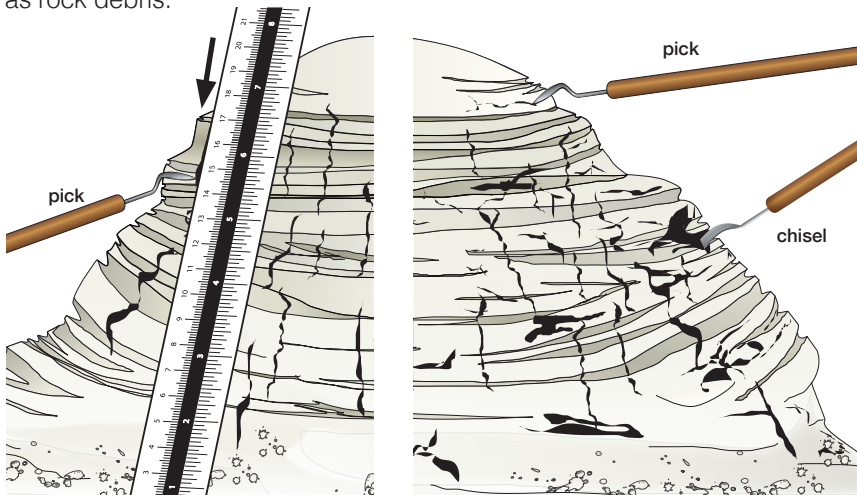
Carve the Plaster

Before you begin, spray the dry Carving Plaster with water. The water will soften the plaster for easy carving and reduce plaster dust. Then, use Easy Rock Carving Tools to carve and shape rock formations. Easy Rock Carving Tools include a Strata Tool, Carving Tool and Duster. Periodically spray the plaster with water while you are carving. Use the Duster to brush away dust and debris from the surface while you are carving in order to view your progress.

The Strata Tool is used to model strata, blasted rock and other weathered outcroppings. Scrape the tool along the surface to develop strata lines. Increase the pressure on the tool for deeper strata lines.



The dual-sided Carving Tool contains a chisel and pick. Use the Chisel-end to carve gouges, rock chunks and model rock breaks. Add cracks, fissures and deepen striations with the pick-end of the Carving Tool. Scrape the pick-end across the rock face in random patterns to score grooves and fine-line abrasions. Use these tools with a ruler to create evenly spaced and realistic blast lines. Save any leftover chunks of Carving Plaster to use later as rock debris.



ROCK MOLDS

Cast highly-detailed rocks with reusable Rock Molds and plaster.

Product Overview

Rock Molds

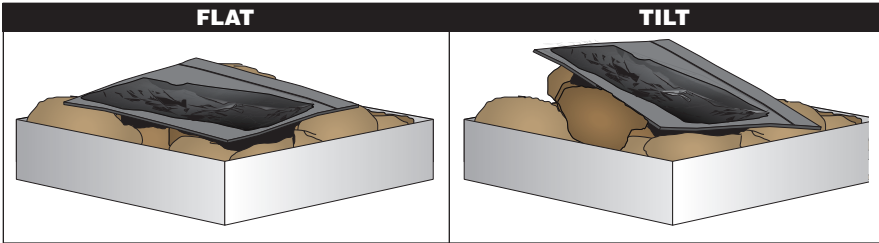
Rock Molds are made of a flexible, durable, rubbery material that has been shaped into the form of a variety of rocks. Each provides a different texture and appearance that can be used in different types of terrain. For the best results, use Lightweight Hydrocal®, Shaper Sheet Plaster or Super Strength Plaster to cast rocks with Rock Molds. Lightweight Hydrocal is often chosen for its light cure weight and short working time. We will use Lightweight Hydrocal for an example in this section.



Support the Rock Mold

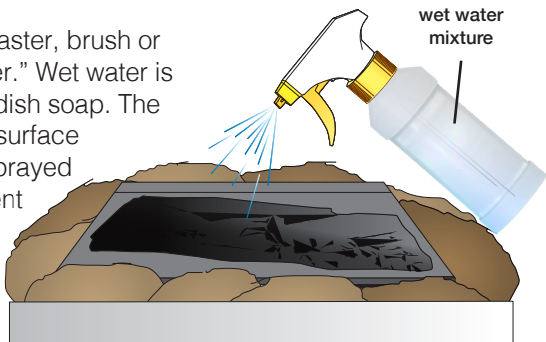
Make sure the Rock Mold will be properly supported before pouring plaster. The molds are rubber and the rock faces are uneven, so they may not sit upright on a table when the plaster is added to it. Support the mold with sand or a box filled with newspaper. Nestle the mold into the sand or newspaper so the edges are supported and the top of the mold is level.

This method of support can also be used to distort the rock's face. To distort and create custom rocks, tilt the mold in any direction and then pour your plaster in. Keep the tilt supported while curing. This will result in a smaller but differently shaped rock.



Prepare the Mold

To prepare Rock Molds for plaster, brush or spray the mold with “wet water.” Wet water is a mixture of water and liquid dish soap. The liquid dish soap reduces the surface tension of the water. When sprayed in a Rock Mold, it helps prevent bubbles developing in the plaster. To make wet water, mix 2 drops liquid dish soap in 1 cup water.

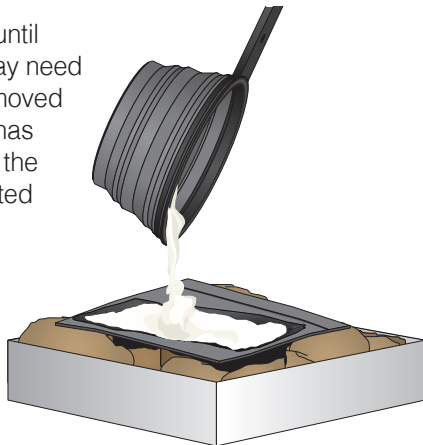


Cast Your Rocks

Following the mixing instructions on the package, pour Lightweight Hydrocal slowly into cold water. Let the plaster stand for two minutes in the cold water. This helps ensure a good casting. Then stir for 1 to 2 minutes. Pour the plaster into the mold immediately. Lightly tap the edges of the mold to dislodge any bubbles and ensure the plaster seeps into all the crevices of the mold.

Let cure approximately 40 minutes or until completely hardened. Larger rocks may need more cure time before they can be removed from the mold. You will know the rock has set and hardened when the surface of the plaster looks chalky. If you have distorted the mold and made a thin or curved casting, leave the casting in the mold overnight before removing it. This will prevent cracking and crumbling.

Color rocks only after they have dried overnight (Chapter 3).

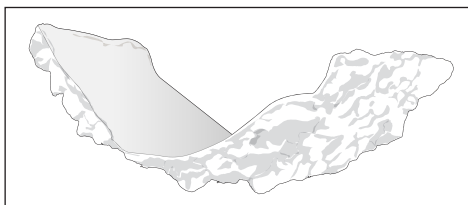


ALTERING ROCK SHAPES

Any plaster rock can be altered for custom fit on a layout. You can alter the Rock Mold before the plaster is poured, or you can make alterations to the rock after it has been removed from the mold.

Curved Rock Faces

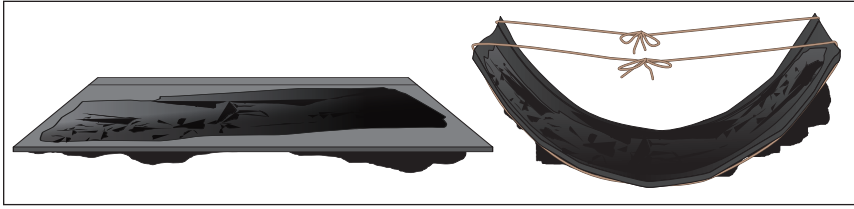
Roads and railroads often run along bluffs or rock cuts that have been blasted to allow the right-of-way for the train or road. Many bluffs have a natural curve to them, and rock cuts can be



blasted in a curved shape. It is easy to recreate these curved, bald, rock faces using Rock Molds. You can bend the mold into a wide U-shape and keep it bent while the plaster in the mold sets and cures. The U-Shape will force the plaster to cure with a realistically curved front face, and the concave back will fit snugly on curved terrain. This method works best for shallow molds. Deep molds may be difficult to bend into a curve.

To secure the mold in a U-shape, you can use clamps or heavy objects to hold the mold in place—or you can simply use some string. Wrap a piece of string around the outside of the mold and pull the ends together until the mold has the curve that you want. Tie the ends together to secure the U-shape. Notice how the edges of the mold indent a bit where the string

stretches across the front face of the mold. Add another piece of string and stretch it so it holds some weight of the mold and then tie it in place. Space the pieces of string evenly on each end of the Rock Mold.



Once you are happy with the shape of the mold and it is held firmly in place, mix the plaster to a paste-like consistency. Apply the plaster by pushing the plaster into the vertical curved areas with a craft stick or brush. If using string to hold the mold in a U-shape, you can also roll the mold to the left and right and let the plaster ooze into the vertical corners. Let cure overnight before removing the rock from the mold. Peel the Rock Mold off of the rock gently.

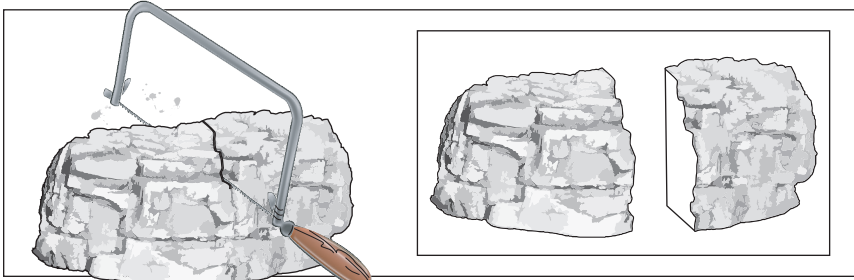


Shaping Rock Faces

After a rock is removed from the Rock Mold, you can easily adjust the rock's face using the Easy Rock Carving Tools. It is easiest to carve into a rock right after it has been removed from the mold because the plaster is still soft and pliable. Lightweight Hydrocal[®] is easiest to carve when it is not fully cured. If your rock is completely dry, soak or mist it with water before carving. This will help soften the rock and reduce plaster dust.

Cutting Rocks

After they have fully cured, rocks can also be cut to smaller sizes using a hacksaw. This is helpful when you need a rock with a clean edge. You can also break rocks into smaller pieces for unique rock shapes. Use the leftover broken debris as rock debris.



MOLDS WITH LATEX RUBBER ONLINE VIDEO

Making your own molds is the ideal way to add unique rock formations to your layout or model rock formations typical of a specific area.

Product Overview

Latex Rubber

With Latex Rubber, you can create molds of rocks that you find in the field. Latex Rubber is ready-to-use and formulated to be thin enough to seek detail and thick enough to be durable for multiple castings.



Preparation

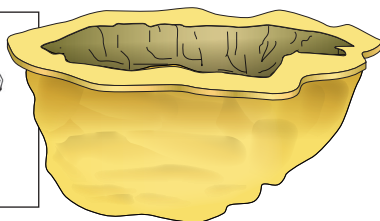
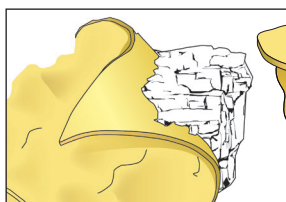
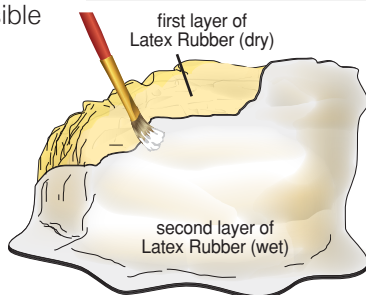
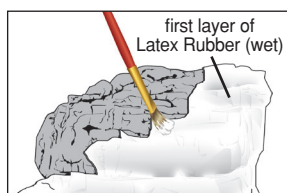
Remove any dirt, dust or residue from the object you are casting before applying Latex Rubber. Wash the object, or rock, in warm soapy water and let dry completely before application.

Latex Rubber can get stuck in a paintbrush easily if allowed to dry on the bristles. Keep a cup of soapy water nearby so you can soak the brush between layers. When you finish applying the Latex Rubber, wash the paintbrush with warm soapy water immediately. Use a wire brush to help clean bristles. These simple steps will save the paintbrush for future use.

The mold will need to be removed from the object after the Latex Rubber has dried. Pick the side of the object that you do not care to have cast. Leave this side free of Latex Rubber so that the object has an exit from the mold once the mold is dry.

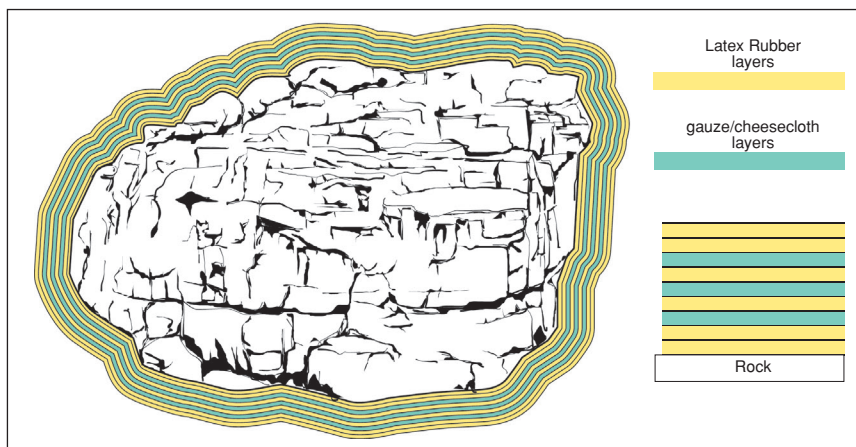
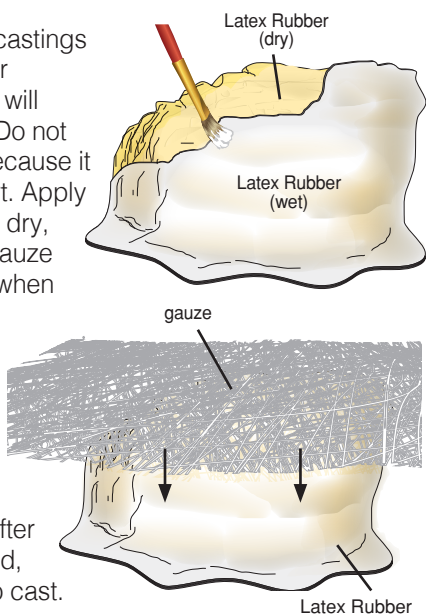
Making a Mold

To make a mold, paint a layer of Latex Rubber on the object of your choice. Be sure to push the Latex Rubber into all the cracks and crevices of the rock or object. You do not want to leave any air bubbles between the rock and the Latex Rubber or the bubbles will be visible in your casting. One layer of Latex Rubber takes approximately 30 minutes to dry. When dry, it will appear pale yellow and slightly translucent. Once it has dried, you can apply another layer. Always allow the previous layer to dry before applying another. If only a few castings are planned from an individual mold, we recommend a total three layers of Latex Rubber. When the three layers are dry, carefully peel the finished mold off the rock. The mold is now ready to cast.



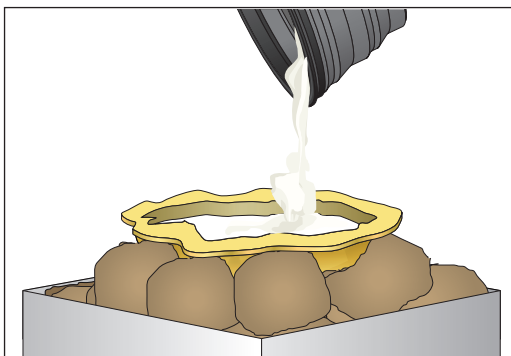
Making Reinforced Molds

If you plan to make a large number of castings from the mold, place a strip of gauze or cheesecloth between layers. The cloth will make the mold thicker, more durable. Do not use a stretchable material like nylon because it will allow the mold to stretch and distort. Apply the first layer of Latex Rubber and let it dry, then apply a second layer. Press the gauze into the second layer of Latex Rubber when the layer is wet. Work the gauze into all the cracks and crevices, and allow the layer to dry. Then apply another layer of Latex Rubber and add another strip of gauze. Repeat this process one more time. Finish the mold by painting on two layers of Latex Rubber without adding gauze. After the final layer of Latex Rubber has dried, peel the mold off the rock. It is ready to cast.



Support the Mold

Pour the plaster into the Latex Rubber mold following the instructions in the Rock Molds section (pages 81-83).



READY ROCKS ONLINE VIDEO

If you do not want the mess of pouring plaster, there are other options.

Product Overview

Ready Rocks™

Ready Rocks are highly detailed plaster castings that are hand-painted with Earth Colors Liquid Pigment. Each Ready Rock is unique and ready to place on your layout right out of the package. Ready Rocks are perfect for modelers who do not want to cast and paint their own rocks or only need a few rocks to complete a project.



Shelf, Rock Face, Creek Bed and Creek Bank Ready Rocks are cast to nest together side-by-side, so you can make a seamless rock wall or creek bed. Sometimes these nesting rocks may have mold flash, which is a small seam where plaster leaked out of the mold. Use 80-grit or 120-grit sandpaper to sand this excess plaster off for the best fit. If white spots occur, use a wash

(page 112) or pencil to color the white spot in. Smudge the pencil mark with your finger to blend in with the rest of the colors.



ROCK FACE



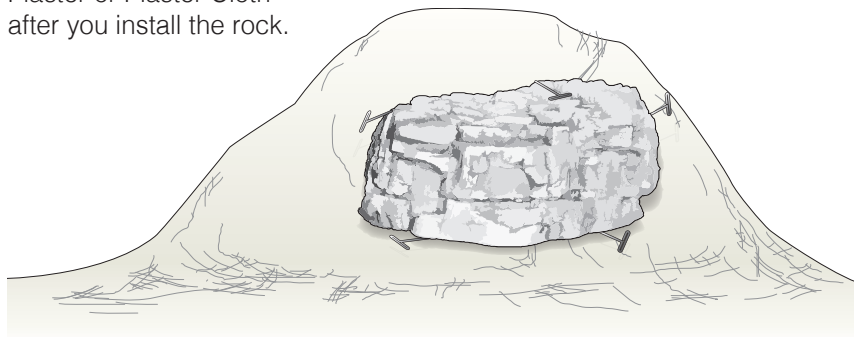
INSTALLING ROCKS

Rocks can be installed on the layout once you have built your terrain contours, or they can be added as details to a more complete layout. Fasten rocks to a plaster surface with Lightweight Hydrocal®, Super Strength Plaster, Shaper Sheet Plaster, wadded Plaster Cloth, Scenic Glue or Foam Tack Glue.

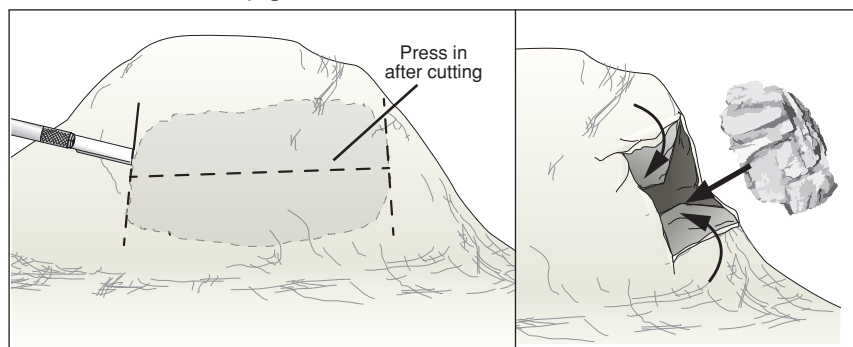
Color rocks before or after installation. If you choose to color them after, take care to not allow the adhesive to drip onto the colored rock's face as it will affect the coloration and require touch up work.

INDIVIDUAL METHOD

To attach rocks to your layout individually, make several in advance and then test fit them against the terrain shell. If you want to test the rock's fit, make a temporary shelf to prop the rock on with Foam Nails. Insert Foam Nails into the terrain shell under the bottom edge of the rock to make the temporary shelf. There will be some space, or a gap, between the rock and the terrain shell. This gap is normal and will be filled with additional Plaster or Plaster Cloth after you install the rock.

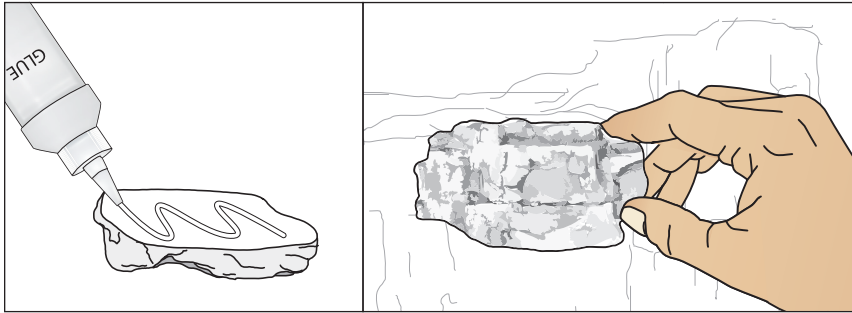


If you can't find a good fit for a rock against the terrain shell, cut the terrain shell and recess the rock. This will not affect the integrity of the terrain shell; it will only ensure you have the rock where you want it. Cut the terrain shell in an H shape and press the two interior sections of the terrain shell until they give and create a shelf, as shown.



Install with Glue

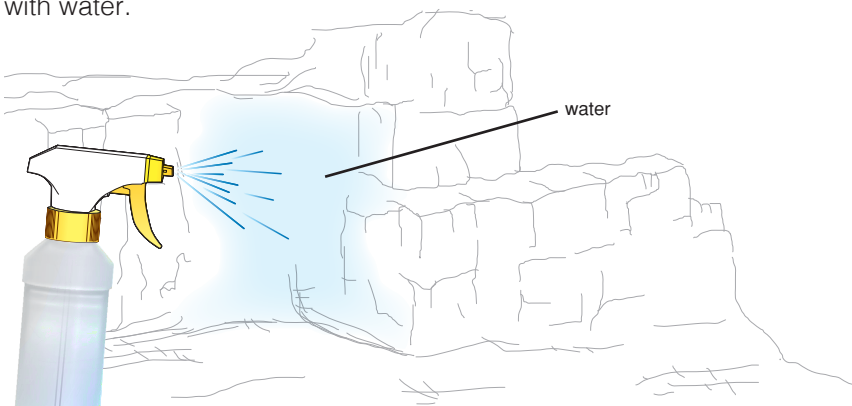
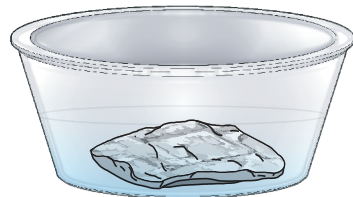
To attach rocks with Foam Tack Glue or Scenic Glue, spread the glue on the back of the rock and place it on the terrain. Hold in place until setting begins. If the rock is on an overhang, use some Foam Nails to support it as the glue dries. Use glue as adhesive when you are installing individual rocks that have a tight fit against the terrain.



Prepare Rocks for Installation with Plaster

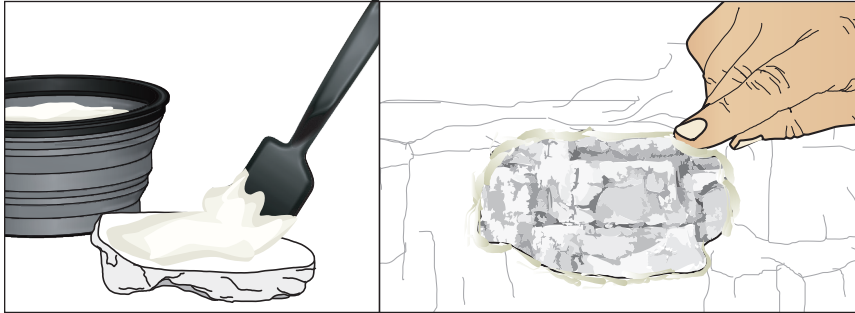
Rocks can be installed with Plaster Cloth or additional Plaster, but the rock should be prepared for installation first. Prepare a rock for installation by soaking the rock in water. Uncolored rocks can be soaked up to an hour, but do not soak colored rocks for more than 10 seconds. Soaking colored rocks for longer than 10 seconds can lead to discoloration.

Then, spray the plaster terrain shell with water to begin your installation. This ensures the rock bonds with the fresh plaster or Plaster Cloth. If either the terrain or the rock begins to dry during installation, mist them with water.



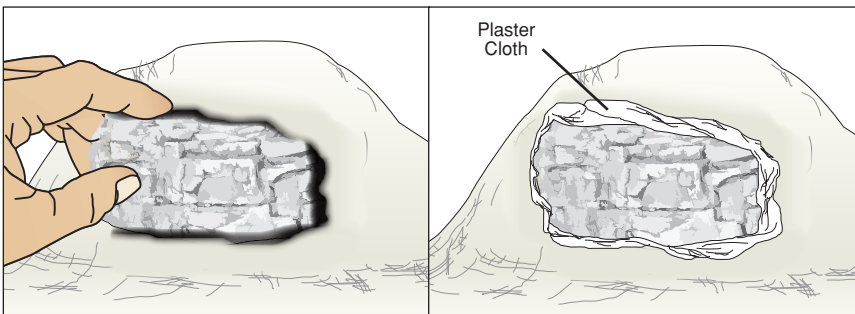
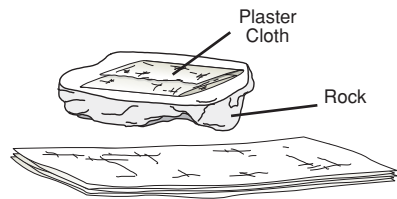
Install with Plaster

To install rocks with plaster, begin by mixing a batch of thick plaster (see page 64). Apply the plaster to the back of the rock and then place the rock on the terrain. Hold the rock in place until setting begins. Some plaster may ooze from behind the rock. Use this excess plaster to fill the gap between the terrain shell and the rock. With wet fingertips, smooth the excess until there is no gap. After it dries, if excess remains, you can chip it off. Use plaster as the adhesive when you know there will be small gaps between the terrain and the rock or when installing multiple rocks to create a rock cliff.



Install with Plaster Cloth

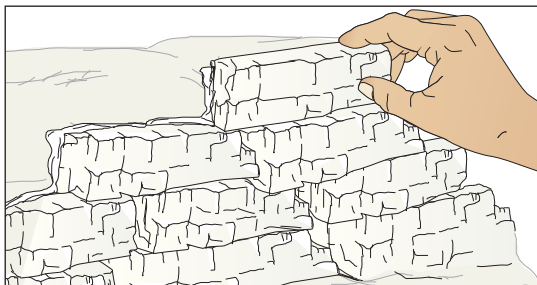
To install rocks with Plaster Cloth, cut it in strips approximately 2" wide x 4" long. Fold or wad one of these strips up in a ball and place it on the back of the rock. Spray the Plaster Cloth with water and then place the rock on the layout. Hold in place until it begins to set. To fill the gaps between the layout and the rock, tuck dry Plaster Cloth strips into the crevices and then spray with water. Tuck and shape the Plaster Cloth until there is no visible gap between the layout and the rock. Plaster Cloth has more body than plaster, use it to install rocks in areas where the terrain shell is uneven and needs to be built up for a good fit with the rock.



BRICK METHOD

Use the Brick Method to create highly-detailed, expansive rock faces and cliffs with individually cast rocks. The brick method is exactly how it sounds: fitting rocks together like bricks. Unlike bricks, which have even, flat sides that easily nest together, not all edges of the rocks will nest perfectly right away. You can, however, make them nest. Simply rub the edges of two rocks together. They will sand each other into a fit.

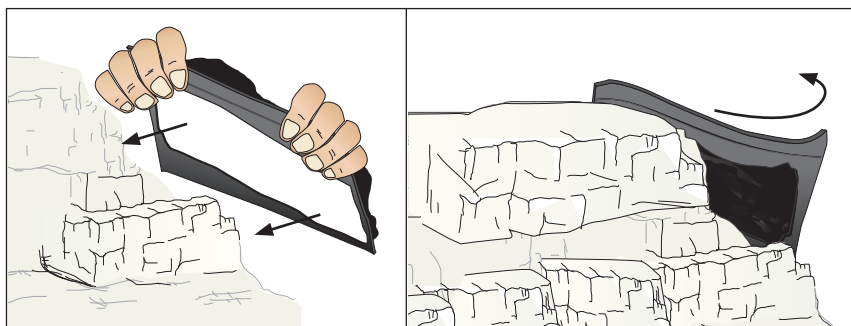
Install rocks tightly together using plaster for the adhesive. We recommend using plaster as the adhesive because the excess that oozes out fills the joints between the rocks. Smooth the excess plaster with wet fingertips.



SHINGLE METHOD

The shingle method of installation involves using the plaster in the Rock Mold as its own adhesive to attach the rock to the terrain shell. This method requires no additional plaster to attach the rocks; however, the rock mold must stay attached until the rock is dry in the mold. Each new rock that is added is shingled over the edge of its neighbor. A second rock cannot be added in the same area until the first is dry and its mold removed. This is a slow-working process, but it can create very realistic rock areas without obvious joints between the rocks.

Pour only one or two rock molds at a time when shingling. When the plaster is poured into the mold, it will look wet and shiny. When it is dry, it looks dull and chalky. Install the mold on the layout when the plaster looks pasty. Wet the terrain with water, then place the Rock Mold on the layout and hold it in place until it sets and is firmly attached. Leave the mold in place on the layout for at least 30 minutes, then peel it off carefully. Fill any gaps between rocks and the layout as described previously.



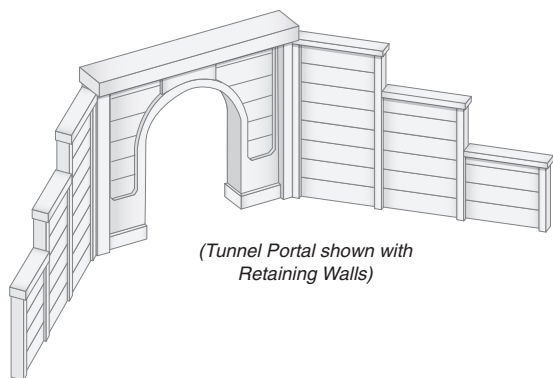
TUNNEL PORTALS, RETAINING WALLS AND CULVERTS

ONLINE VIDEO

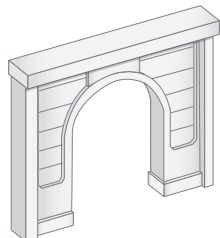


Tunnel Portals, Retaining Walls and Culverts are made of high-density plaster, which can easily be stained or detailed further. Each one goes in a different location in relation to tracks or roads. Tunnel Portals are placed at tunnel openings to provide a realistic facing for tunnel entrances. Retaining Walls are used to stop rocks and dirt from falling on the track along steep terrain. Culverts are drains on either side of a road or track. They help direct water by diverting it under roads and railroad tracks.

Tunnel Portals, Retaining Walls and Culverts are all installed in the same manner as rocks. See the Installing Rocks section (page 87).



TUNNEL PORTAL



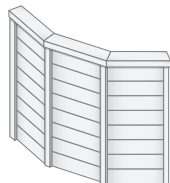
RETAINING WALL



Straight Walls

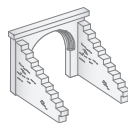


Stepped Walls



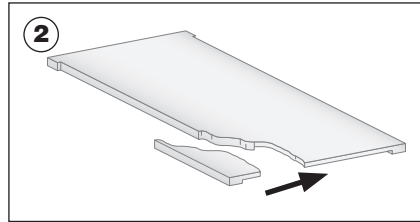
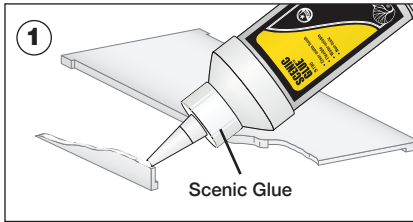
Curve Walls

CULVERT

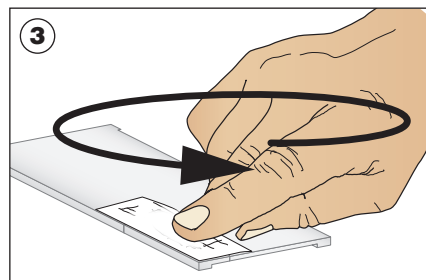
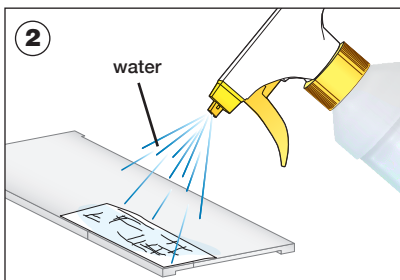
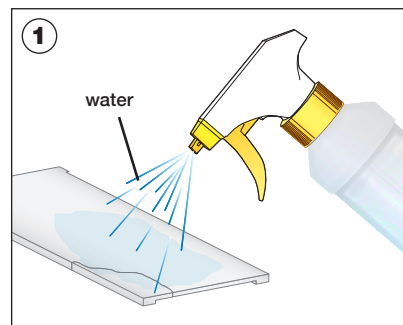


Repair Tunnel Portals, Retaining Walls and Culverts

The plaster pieces are very durable, but are not unbreakable. Repair breaks with Scenic Glue. **(1)** Apply the glue to both sides of the break then **(2)** press the pieces together. Hold until it sets.



You can also use a couple small pieces of Plaster Cloth to repair a break. **(1)** Spray the broken pieces with water then place the Plaster Cloth along the back of the broken pieces. **(2)** Spray the Plaster Cloth with water and **(3)** spread the plaster with wet fingertips (hold the pieces together tightly). Layer another piece of Plaster Cloth over the first. When dry, the piece can be installed.



ROADS

Roads come in a variety of shapes, sizes and styles depending on the location and time era you have chosen for your layout. Whether you're modeling a gravel road in the country, an asphalt highway or a concrete sidewalk, the Road System has everything you need.



Product Overview

Paving Tape™

Paving Tape is an adhesive-backed foam tape that is used to create forms for paving. It works on straight roads, as well as curves, and is easy to apply and remove. Use Paving Tape to model streets, roads, sidewalks and parking lots.



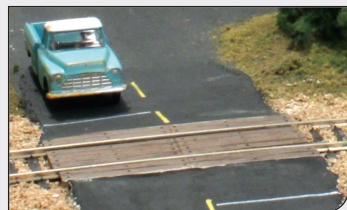
Smooth-It™

Smooth-It is a plaster material that is used to smooth rough spots and create streets, roads and parking lots. Just mix it with water and apply directly to any clean, hard surface, then sand and paint. Smooth-It is easy to apply to new and existing layouts. You can use Smooth-It on Plaster Cloth, Shaper Sheet Plaster, Foam Sheets, Homasote and plywood.



Grade Crossings

Grade Crossings come in two styles (Wood and Steel) and are available in N, HO and O scales. These realistic-looking and ready-to-place Grade Crossings have notches to fit over rail spikes and the included styrene shims correspond to proper code.



ROAD PLACEMENT

In the countryside, roads are frequently built parallel to railroad tracks and are often gravel. In mountainous areas, roads generally follow the valleys rather than climbing to the top of each mountain. When they do climb a mountain, they often climb in tight hairpin curves or switchbacks. In cities and towns, roads are parallel to tracks. They also cross tracks to provide access to businesses and industries for workers and customers. Roads in cities and towns also tend to be paved.

Remember that roads, like railroad tracks, are built for a purpose. They connect towns, provide access to industries and give people a route to get to their homes. When you design roads, you must also design places to put the cars and trucks that travel on them. So, be sure to include parking areas by houses and industries.

SCALE

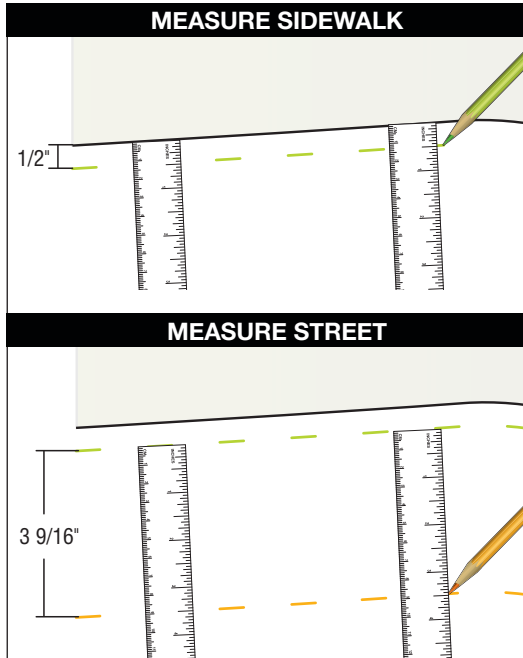
The first step in making a road is determining how wide it should be. Use the chart below to determine the width that you need to make your road.

SCALE	CITY STREET 26' (7.92m)	COUNTRY ROAD 20' (6.09m)	HIGHWAY LANE 11' - 12' (3.35m - 3.65m)	SIDEWALK 4' (1.21m)
N	1 15/16" (4.92cm)	1 1/2" (3.81cm)	13/16" - 15/16" (2.06cm - 2.38cm)	5/16" x (0.79cm)
HO	3 9/16" (9.04cm)	2 3/4" (6.98cm)	1 1/2" - 1 5/8" (3.81cm - 4.12cm)	1/2" (1.27cm)
O	6 1/2" (16.5cm)	5" (12.7cm)	2 3/4" - 3" (6.98cm - 7.62cm)	1" (2.54cm)

DRAWING ROADS

With a Foam Pencil, draw the outline of your road on the layout. If you plan to include a sidewalk, be sure to add it to the overall width. Draw a separate line to show where the road stops and the sidewalk begins. The trickiest part of drawing out a road is the curves. Use the Flexi Edge (pages 109-110) to hold a curved line or use a ruler to measure the width as you draw.

Creating Gravel Roads will be discussed in Chapter 3 (page 108). Continue reading to create paved areas.

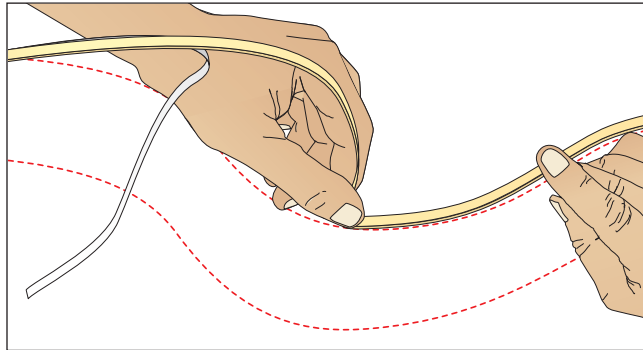


CREATING PAVED AREAS ONLINE VIDEO

Smooth-It is used to create paved areas. It can be applied with or without Paving Tape, which acts as a form and creates clean edges for the sides of the road. Skipping the Paving Tape may cause Smooth-It to have irregular edges. If you choose to use Smooth-It without Paving Tape, simply mix and apply.

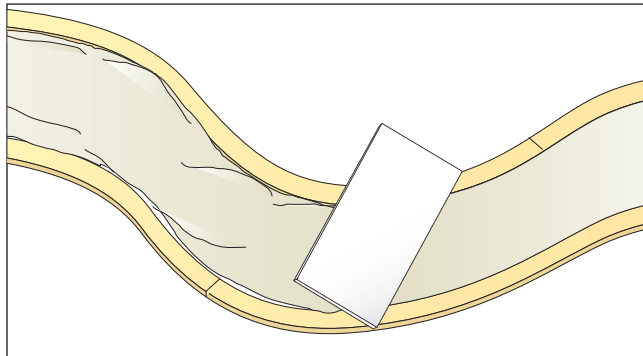
To make a road using Paving Tape, start by laying the Paving Tape in small increments along the outer edges of the road's drawn outline. Peel the protective backing off the Paving Tape a few inches at a time. Once the Paving Tape is in position, press it down firmly. When you reach the end

of your road, cut the Paving Tape and repeat the process on the other side of the road. If you are making a parking lot or other area, lay Paving Tape on all sides of



the area you want to be paved, butting the ends together so that the Paving Tape creates a little wall that will contain the wet Smooth-It. Lay masking tape down along all outside edges of the Paving Tape. This will protect against spills and can be peeled up easily after Smooth-It has dried.

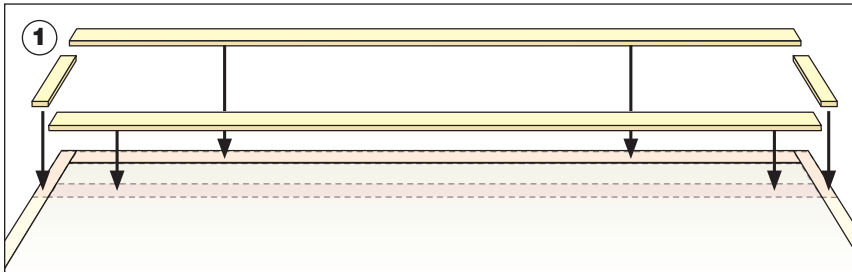
Mix a batch of Smooth-It according to package directions. Pour the mixture between the Paving Tape. Then use the Spreader included with the Paving Tape to level the Smooth-It. Use the top edge of the Paving Tape as a leveling guide. Do not apply pressure to the Paving Tape when spreading the Smooth-It.



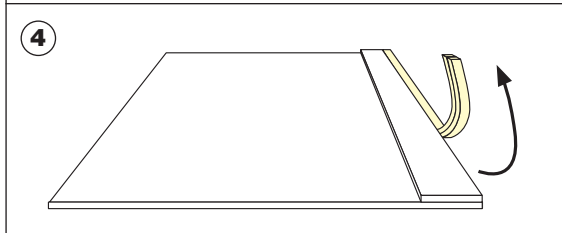
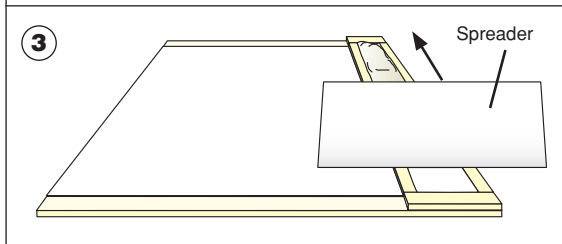
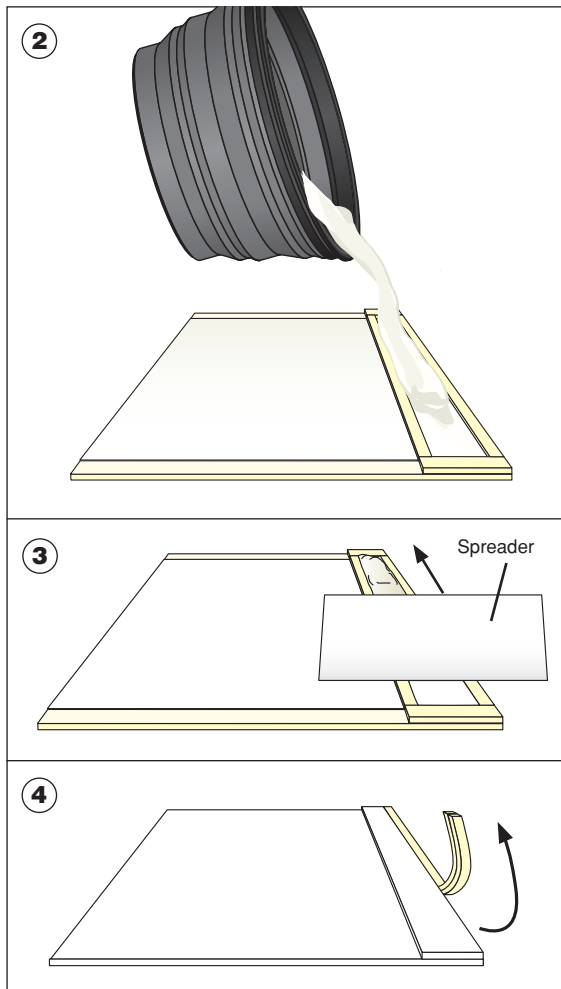
For areas without a sidewalk, you can remove the Paving Tape after drying for 30 minutes. Allow the Smooth-It to dry for 24 hours and proceed to the Finishing Paved Areas section on page 109 for painting and weathering techniques.

CREATE SIDEWALKS AND CURBS ONLINE VIDEO

Allow Smooth-It in the paved area to dry for at least 1 hour before beginning a sidewalk. For sidewalks and curbs, lay a strip of Paving Tape over the existing strip (or strips) beside the road you've just created.



Lay another piece of Paving Tape on top of the paved area, leaving a gap wide enough for the sidewalk or curb. Spread Smooth-It between the strips of Paving Tape and allow it to dry for 30 minutes. Do not leave Paving Tape in place any longer than necessary. Carefully pull Paving Tape away from the Smooth-It.



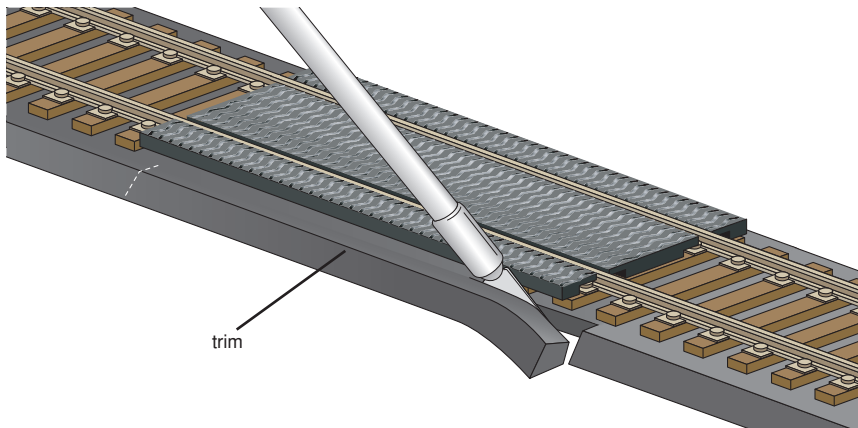
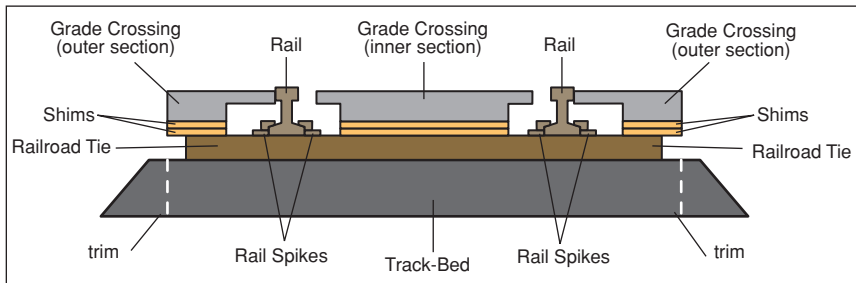
ROAD CROSSINGS ONLINE VIDEO

Road crossings are necessary wherever a street or road crosses railroad tracks. First, determine the width and position of the road and draw it onto the terrain shell. Once the position of the road has been determined, install the Grade Crossing where the road will be crossing the railroad tracks. To build a proper road crossing, you will need to install a Grade Crossing and then adjust the road's height with an Incline/Decline or Smooth-It to match the height of the Grade Crossing.

Installing Road Crossings

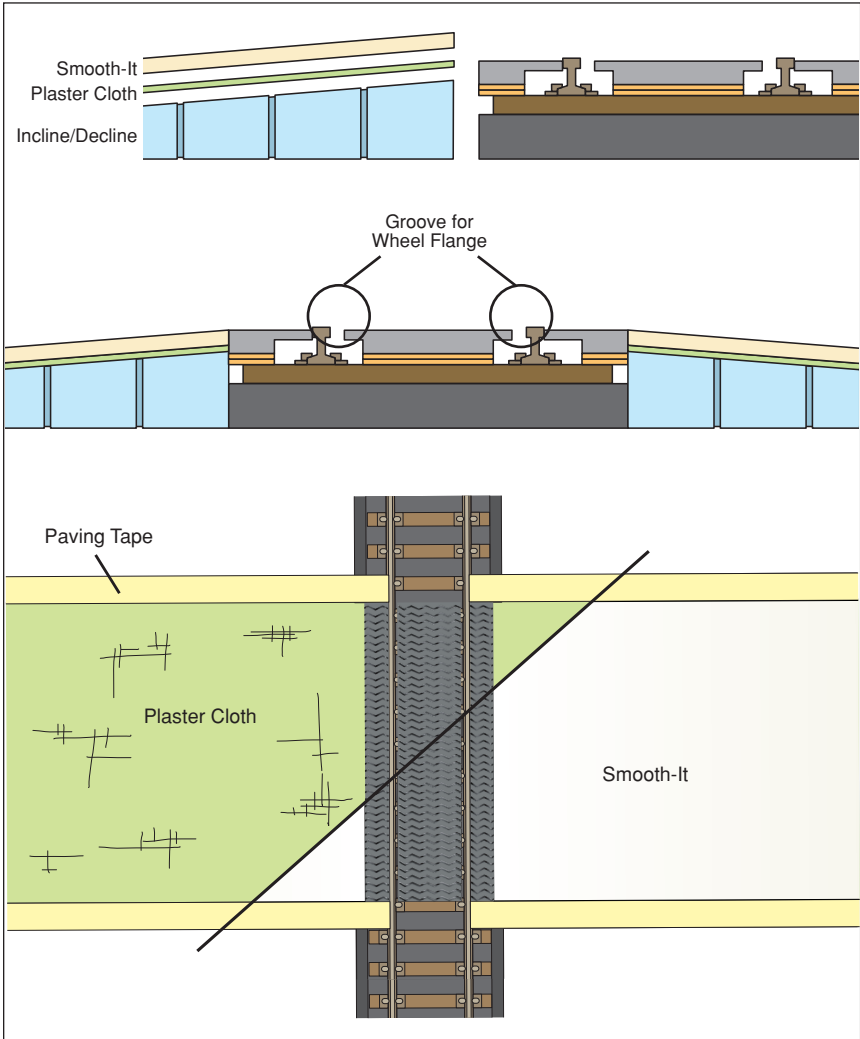
To begin installation, check the fit. Place the Inner Section of the Grade Crossing on top of the ties, centered between the rails so there is enough space for the train wheel to pass through. Check the height. The height of the Grade Crossing pieces should be slightly lower than the top of the rails. If the Inner Crossing is too low, use the included Shims to bring the Grade Crossing closer to the height of the rails. Glue the Inner Section in place with super glue. Then, install the Outer Sections of the Grade Crossings.

The Outer Sections of the Grade Crossings are designed with a lip that allows them to be placed over the top of the rail tie spikes. Install the Outer Sections flush against the outside of the rails on both sides of the track. The Outer Sections should be the same height as the Inner Section, so use the Shims to raise the height, if needed. Glue in place.



Raising Road Height

Once the Grade Crossings have been installed, it is time to raise the road's height to the height of the installed Grade Crossing. To do this, notch the Track-Bed flush with the Outer Section of the Grade Crossing. Then, cut an Incline/Decline in the appropriate length and height. Cut the Incline/Decline slightly lower (1/8") than the height of the Grade Crossing to allow for the Plaster Cloth and/or Smooth-It to be installed so the height of the road will match the Grade Crossing. Butt the Incline/Decline against the Outer Sections of the Grade Crossings and install as described in the SubTerrain Chapter. If railroad ties are longer than Outer Section, notch the Incline/Decline to fit. Then, cover the Incline/Decline with Plaster Cloth and finish the road with Smooth-It and Top Coat.



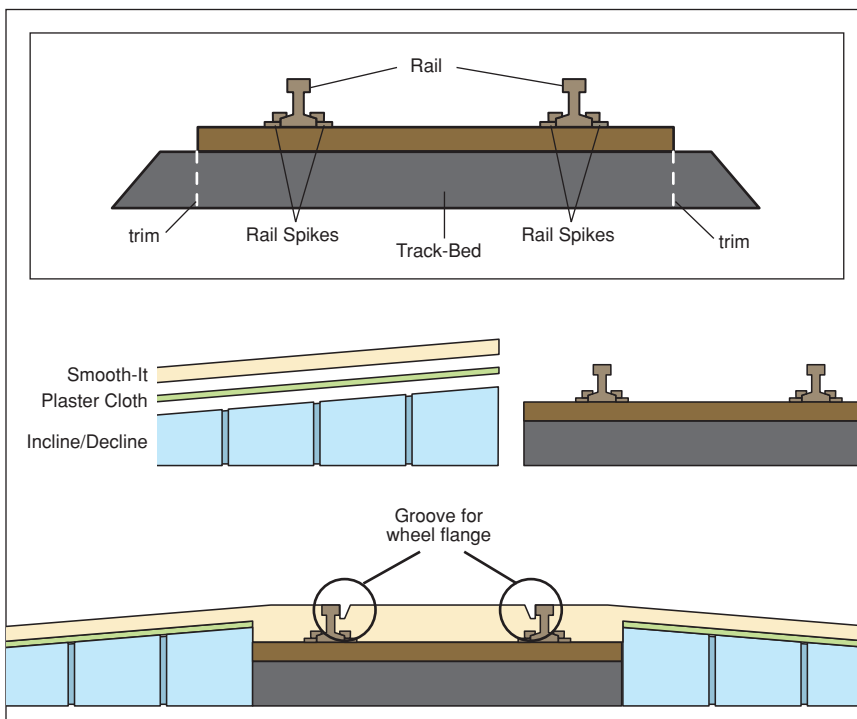
Smooth-It (Paved) Road Crossings

Some rail crossings are made of concrete or asphalt. The asphalt and concrete completely covers the railroad ties and provides an even, continuous surface for vehicles to cross. This kind of crossing is common in large cities where trains are used for commuting.

To create paved crossings, begin by notching the Track-Bed on both sides of the rails so it is flush with the railroad ties. Notch the Track-Bed only as wide as the road. To create a large concrete or asphalt area, notch the Track-Bed the entire length of the area that will be paved.

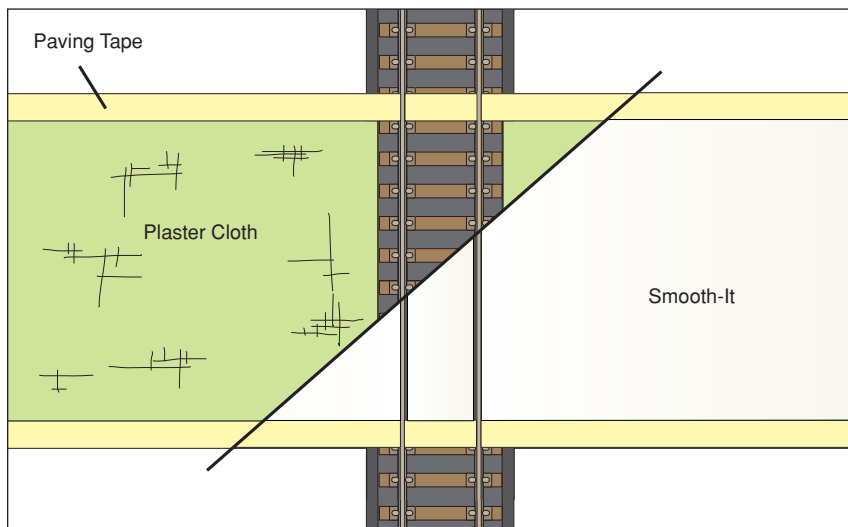
Cut two Incline/Decline Starters slightly shorter than the rails, leaving 1/8" to allow for a layer of Plaster Cloth and a coat of Smooth-It. Butt the Incline/Decline up to the railroad ties and glue in place. Lay masking tape over the rails to protect them, and then apply Plaster Cloth over the Incline/Decline on both sides of the track. Remove the masking tape and let the plaster dry. Then, install Paving Tape as described previously around all edges of the road.

Next, the Smooth-It will be installed over the railroad ties inside the rails. Place two strips of Paving Tape inside the rails on either side of the area that will be paved. Then lay thin strips of masking tape over the rails to protect them. Apply Smooth-It on both sides of the rails and between the rails. Wipe rails free of Smooth-It with a wet cotton swab and allow Smooth-It to dry.



Once dry, use a hobby knife and ruler to score a groove in the Smooth-It on the inside of each rail. This will allow the train's wheels to pass through the road crossing.

Finishing and weathering the surface of the road will be discussed in Chapters 3 and 4.



REPAIR TERRAIN GAPS

Before landscaping, check your layout thoroughly for any gaps in the terrain. If you find any gaps, cracks or areas where you don't like the terrain contours, you can fill these areas with Lightweight Hydrocal®, Shaper Sheet Plaster or Plaster Cloth.

If a terrain contour will interfere with your layout or track plans, remove the contour with a hobby knife as described in the Rock Installation section (page 87). Use Plaster Cloth or scrap pieces of Shaper Sheet to form the new contour.

Now is a good time to add any features you may have overlooked during construction. Add terraces and berms, or enhance the size of a mountain. Be sure to build up the banks of rivers, ponds, lakes or other water features so that the water product (pages 170-173) you use will be contained by the terrain.