

Greg's Deck Design

Congratulations! You just completed your Trex deck design. This report will provide the following information:

- Deck Layout Diagrams
- Deck Parts Descriptions
- Tool & Installation Tips
- Beam Layout
- Materials Cut-List
- Component Description
- Shopping List

For your convenience, we have provided contact information for two TrexPro® contractors and dealers closest to your zip code. For a complete listing of TrexPro contractors or dealers in your areas, please visit www.trex.com.

TrexPro® Contractors:

Decks Plus
243 Murdell Lane
Livermore, CA 94550
925-449-1641

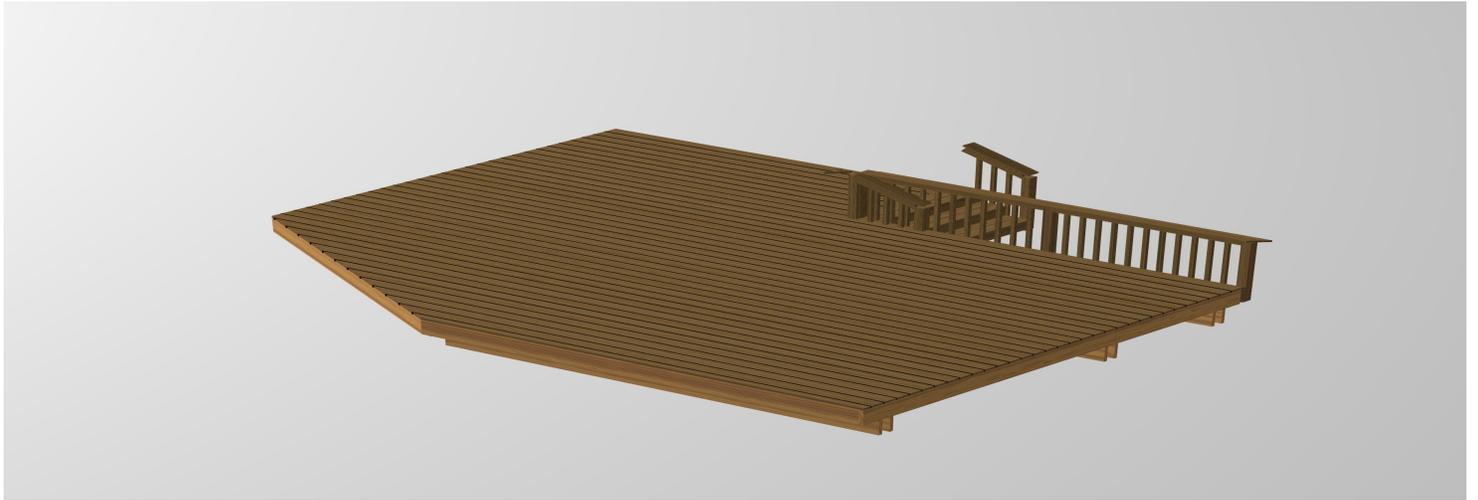
Honey Do Repair & Remodel
11881 Skyline Blvd, Suite F
Oakland, CA 94619
510-531-9500

Trex Dealers:

GOLDEN STATE LUMBER INC
38801 CHERRY ST
NEWARK, CA 94560
510-818-1000

GOLDEN STATE LUMBER INC
1100 ANDERSON DRIVE
SAN RAFAEL, CA 94901
415-454-2532

Deck Layout Diagram



Top view with planks

Deck Layout Diagram



Top view without planks



Image of bottom view

Trex[®] Deck Specifications

Level 1:

Dimensions: 24' 7"x20'x2'

Product Selections:

Decking:

Trex Origins[™]

Saddle

Railing:

Trex Traditional Series Railing[™]

Balusters: Saddle

Post Caps: Winchester Grey

Handrail: Saddle

Top Rail: Saddle

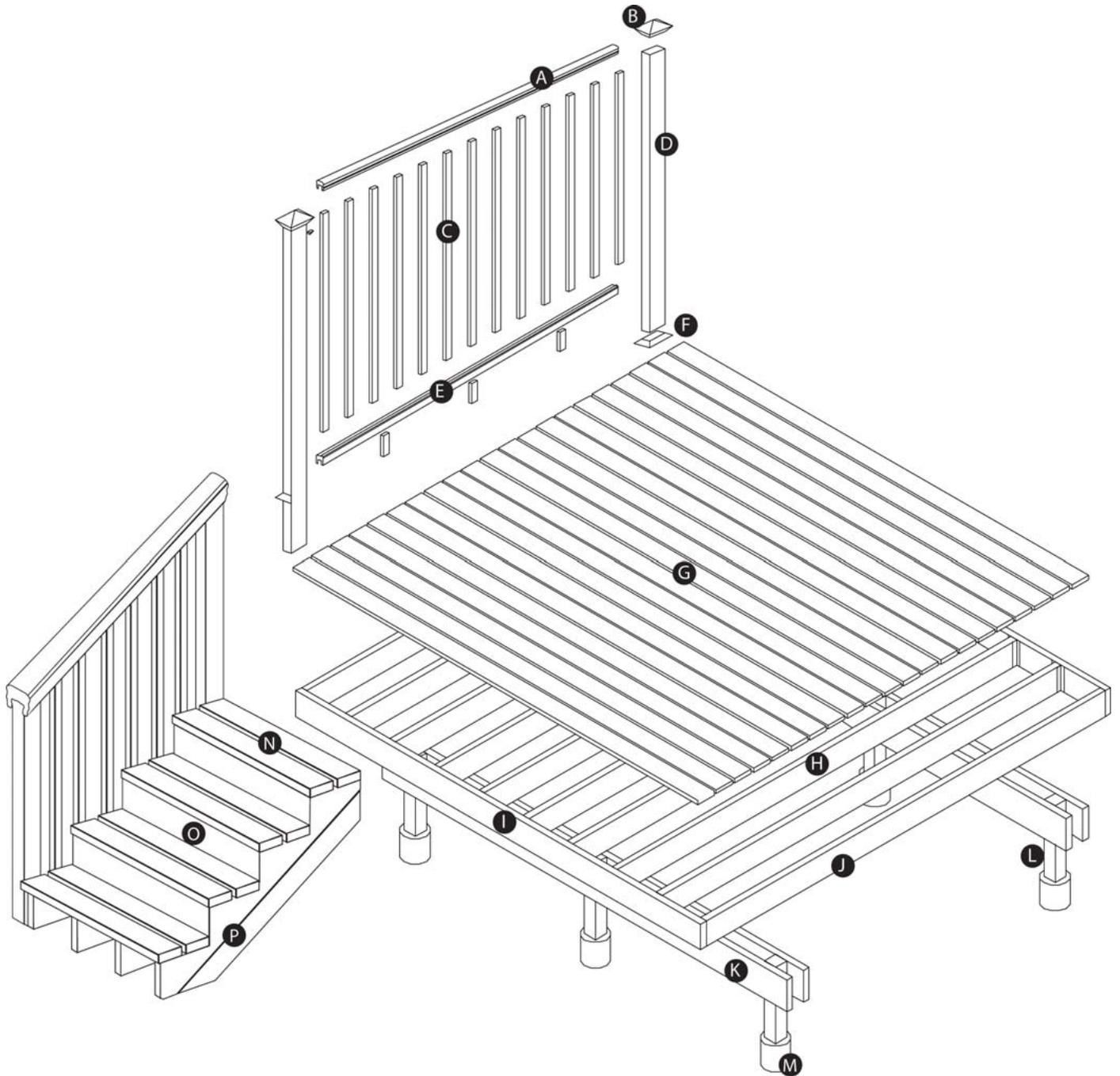
Bottom Rail: Winchester Grey

Post: Saddle

Fascia: Saddle

Entire deck dimensions: 24' 7"x20'x2'

Parts of a Trex[®] Deck



Glossary of Terms

- A. Top rail:** The horizontal member, attached to the top of the balusters as well as the posts.
- B. Post Cap:** A decorative cap attached to the top of the post to protect the post from the weather.
- C. Baluster:** A vertical railing member, filling the area between the posts.
- D. Rail Post:** A vertical member that supports the railing.
- E. Bottom rail:** The horizontal member attached to the bottom of the balusters, as well as the post. The Bottom Rail is not required if the balusters extend to and are attached to the Rim Joist.
- F. Post skirt:** A piece of trim that covers post cutouts in decking allowing for faster installation and a more finished look.
- G. Decking:** The decking boards that serve as the walking surface.
- H. Joist:** Dimensional lumber, set on edge, which supports decking
- I. Rim Joist:** A board fastened to the end of the joists, typically opposite of the ledger.
- J. End Joists:** The joists at the end of a series of parallel joists.
- K. Beam:** Supported by posts, the beam is the main horizontal support for the deck.
- L. Post:** Vertical supports that rest on footings and support the beam.
- M. Footing:** The below-ground support of a deck's post, usually made from concrete.
- N. Tread:** The walking surface of each step in a stairway.
- O. Riser:** A board attached to the vertical face of a step between treads.
- P. Stringer:** The support frame of stairs where the risers and treads attach to.

Fascia Board (*not shown*): The boards used to cover rim joists and end joists (also known as face boards).

Ledger (*not shown*): A board, equal in size to the joist, which anchors the deck to the house and supports one end of the deck.

Batterboard (*not shown*): Horizontal boards attached level to stakes, used as reference or guides during the initial excavation and rough grading of a deck construction.

Basic Installation Tips

Building code and zoning requirements

- Check deed restrictions, building codes and/or zoning laws to make sure your deck complies.
- Check with local utility companies to make sure deck construction will not disturb underground piping or wiring.

Deck function

- While planning your deck, determine how it will be used.

Your climate

- While planning your deck, consider local weather.
- Take advantage of good views and sun movement.

Install ledger

- Install ledger if anchoring deck to house.
- Ledger placement determines the deck floor level, normally 2-4" below floor line.
- If unsure about attaching a ledger board, consult a professional. This is a critical connection.

Outline Deck Area

- Use batterboards and mason's string to mark off deck area and locate footing.
- Attach string to ledger and/or batterboards.
- Batterboards go just outside perimeter corners of the deck.
- Use the 3-4-5 method to get a 90 degree angle in one corner.

Site Preparation

- Weed the area where deck will be built.
- Remove sod 4"-6" from staked area; replace with gravel and level.

Install posts

- Locate posts by measuring in from batterboards.
- Postholes can be a minimum of 24" deep to a maximum of 48" deep depending on the height of the column and the depth of the frost line.
- Check on the frost line in your area.
- Determine method of setting post.

Basic Installation Tips

Post bracing

- Perimeter posts over 5' high from ground to deck need bracing.

Attach beams to posts

- Determine the desired deck floor height on the posts.
- Determine height for securing the top of the beam to the post.
- Attach with through bolts.

Attach joists

- Space joists 16" on center.
- Joists are attached to ledger board with joist hangers or by toenailing.
- Determine where blocking will go and snap a chalk line, but make sure to stagger pieces for ease of nailing.

Lay decking

- Do not butt boards together; ensure a gap of 1/8" minimum at all butt joints.
- The deck boards can be trimmed after they are installed.
- Ensure Trex decking is gapped side to side. Use Gapping Tool.

Railings

- Railings must be firmly attached to the framing members of the deck and follow the Trex Railing installation instructions closely.

Stairs

- Stairs should be at least 3' wide.
- Check local codes on stair restrictions, including rise and run limits.

Multi-level decks

- When planning a multi-level deck, for aesthetics make one deck larger than the other.

Tools Required & Tips for Success

For more detailed information on building with Trex, please download our Product & Installation Guide on trex.com.

- | | | |
|--|---|--|
| <input type="checkbox"/> Carpenter's level | <input type="checkbox"/> Hoe and hose (to mix concrete) | <input type="checkbox"/> Shims or spacers |
| <input type="checkbox"/> Chalk line | <input type="checkbox"/> Ladder | <input type="checkbox"/> Shovel |
| <input type="checkbox"/> Chisel | <input type="checkbox"/> Mallet | <input type="checkbox"/> Socket wrench |
| <input type="checkbox"/> Circular saw | <input type="checkbox"/> Nail set | <input type="checkbox"/> Stakes & Batterboards |
| <input type="checkbox"/> Claw hammer | <input type="checkbox"/> Pencils | <input type="checkbox"/> String |
| <input type="checkbox"/> Crescent wrench | <input type="checkbox"/> Pick | <input type="checkbox"/> Tamper |
| <input type="checkbox"/> Drills and bits | <input type="checkbox"/> Plumb bob | <input type="checkbox"/> Tape measure |
| <input type="checkbox"/> Dust mask | <input type="checkbox"/> Post hole digger | <input type="checkbox"/> Trex Gapping Tool |
| <input type="checkbox"/> Extension cord | <input type="checkbox"/> Rafter square | <input type="checkbox"/> TrexExpress™ Railing Tool |
| <input type="checkbox"/> Framing square | <input type="checkbox"/> Ruler | <input type="checkbox"/> Tool belt |
| <input type="checkbox"/> Gloves | <input type="checkbox"/> Safety glasses/goggles | <input type="checkbox"/> Two foot level |
| <input type="checkbox"/> Hand saw | <input type="checkbox"/> Screwdrivers | <input type="checkbox"/> Wheel barrow |

Tips for Success:

Safety

1. Pressure-Treated Wood contains a pesticide. If cutting Pressure-Treated material, a fabric breathing mask will help to avoid ingestion of the dust.
2. Wear gloves as the wood surface is rough and can cause splinters.
3. Invest in a pair of kneepads if you are doing floor jobs or working on a deck. It will help prevent future injuries.
4. Dispose of scraps in the regular trash or take to a landfill. Never burn.
5. When cutting or drilling wood, always wear eye protection to prevent injury from flying wood particles.

Cutting & Drilling

1. When using a miter box saw, we recommend a 10-12" saw blade with 30 teeth or less.
2. Screw guns provide a quick and easy way to fasten Trex.
3. When drilling, periodically lift the bit out of the hole to remove the shavings.
4. Trex routs beautifully to give extremely crisp edges. Do not rout 2x2 or 4x4 profiles. Trex does not recommend routing Trex Brasilia™. Routing will change the unique surface of this product.
5. For most Trex profiles, saw blades with fewer teeth (18 to 24, on a 7¼" blade) stay cooler and last longer. When cutting Trex Artisan Series Railing™, Trex recommends using 42-tooth carbide-tipped blade.
6. Trex does not have a linear grain like wood, and will not split if fasteners are started 1" from the board edges and angled into the joist. Pre-drilling will reduce the probability of splitting when close to the board end.

Tools Required & Tips for Success

Fasteners

Trex[®] decking and railing systems can be assembled with most traditional outdoor fastening methods. Hot-dipped, galvanized, ceramic-coated, and stainless steel fasteners resist rust and stains. We recommend these five fastening options:

1. **Exterior grade deck screws:** Fewer threads per inch work best. You will need to flatten excess shavings after screw is in place.

2. **Composite-decking screws:** These screws are designed to pull the shavings into the screw hole. If you want the screws to coordinate with Trex colors*, you can use Fastenmaster[®] TrapEase[®] screws.

3. **Trim-head screws:** These screws have sufficient holding power and their small head decreases screw visibility.

4. **Hidden Fasteners:** There are several brands of hidden fastener systems that work well with Trex. Check with the manufacturer if you have questions about suitability.

5. **Nails:** Nails are also effective on Trex. Spiral shank nails have extra holding power. The minimum diameter nail recommended is 0.120".

Minimum Fastener Size				
Profile	Nails		Screws	
	Length	Gauge	Length	No.
5/4	3"	10 or 11d	2-1/2"	#7
2 x 6	3"	10 or 11d	3"	#7

* Fastenmaster[®] and TrapEase[®] are registered trademarks of Olympic Fasteners.

Tools Required & Tips for Success

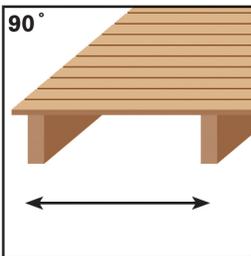
Joist Spanning

The joists must be spaced according to the chart below. Be sure that all joists are level and plumb. Trex[®] decking must span at least three joists.

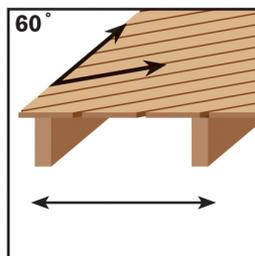
Trex Decking Span Chart

Loading	Residential Decks, Light Duty Docks, Residential/Daycare Playground	Commercial Decks, Boardwalks & Marinas	
	100 psf	100 psf	200 psf
5/4 x 6	16"	16"	12"
2 x 4, 6	20"	20"	16"
2 x 6 HS	24"	24"	16"
5/4 x 6 Stairs	10.5"	10.5"	10.5"
2 x 6 Stairs	12"	12"	12"

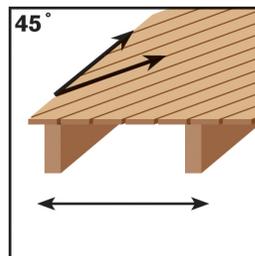
Adjust Joist Spanning to Accommodate Angled Decking Patterns



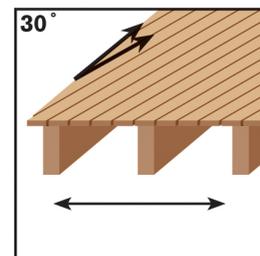
Perpendicular to joists. See chart above.



At a 60° angle, maximum joist spanning is 2" less than above chart.



At a 45° angle, maximum joist spanning is 4" less than above chart.



At a 30° angle, maximum joist spanning is 1/2 of the above chart.

Tools Required & Tips for Success

Gapping

Trex[®] decking **must** be gapped, both end-to-end and width-to-width. Gapping is necessary to facilitate proper drainage and for the slight thermal expansion and contraction of the *Trex* decking boards. Another reason for gapping is to account for shrinkage of the wood joist system. Following the proper gapping requirements will ensure that your deck will look great year after year

Width-to-width

The required width-to-width gapping is 1/4". When installing in temperatures below 40° F, 3/8" gapping is recommended.

End-to-end

Trex decking must also be gapped end-to-end, based upon the temperature at installation. See chart below.

Abutting Solid objects

Trex decking must also be gapped 1/4" – 1/2" depending upon the temperature at installation when decking is abutting a wall. See chart below.

- Always follow Trex recommended gapping guidelines.
- Maximum allowable overhang for Trex is 4".
- All decks require air circulation to keep them dry and looking good. Leave openings under the decking or increase gapping to 3/8" to improve airflow.
- Trex used as vertical siding or fascia around the base of a deck must be gapped the same as decking to allow for airflow.
- Fascia should be attached with two screws every 12-18", although 3 screws should be used with 1x12 material.

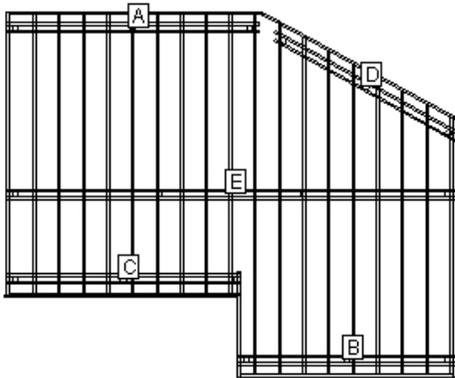
Width-to-Width Gap	
Below 40° F*	3/8"
Above 40° F*	1/4"

* Temperature at installation

End-to-End & Abutting Gap		
	End-to-End	Abutting
Below 60° F*	3/16"	1/2"
Above 60° F*	1/8"	1/4"

* Temperature at installation

Permit Page: Level 1



LOAD AND SUPPORT:

Your deck will support a 34 PSF live load.
Posts have 36" below ground support.

DECK AND POST HEIGHT:

You selected a height of 24" from the top of the decking to the ground level. The top of the deck support posts will therefore be 11.25" above ground level.

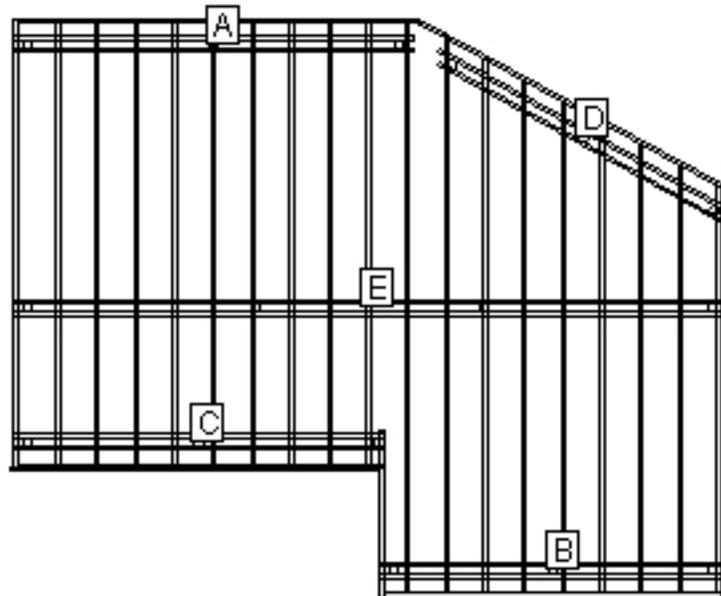
Joists:

Set joists on top of beams, 16"; center to center.

Stress Analysis: Level 1

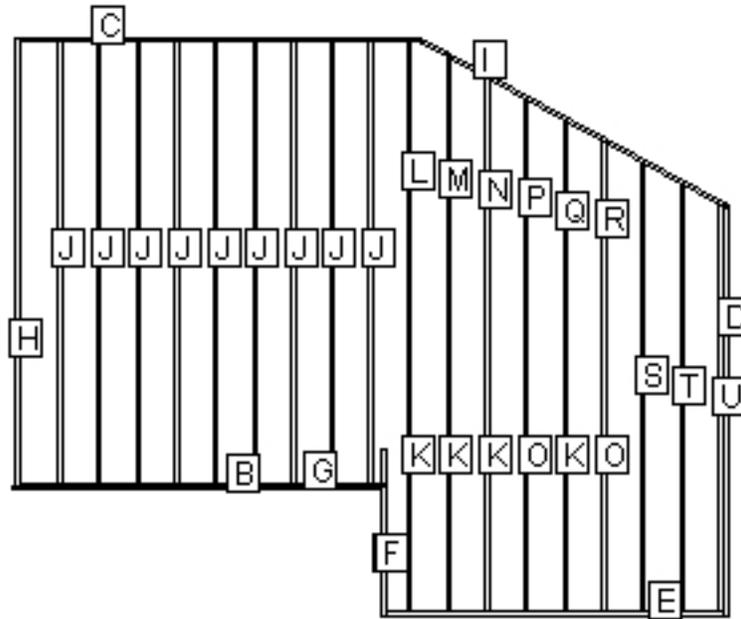
Component	PSF
Joist Deflection	666
Joist Bending	103
Joist Shear	169
Joist Compression	198
Beam Deflection	77
Beam Bending	77
Beam Shear	60
Bolt Shear	53
Post Stability	91

Beam Layout Level 1



BEAM LABEL	BEAM LENGTH	POST COUNT	POST SPACING
A	13' 8 1/2"	3	6' 4 1/2"
B	11' 10 1/4"	3	5' 5 1/2"
C	12' 8 1/2"	3	5' 10 1/2"
D	11' 5 1/4"	3	5' 2"
E	24' 5 1/4"	4	7' 10"

Framing Layout & Cut List: Level 1



LABEL	NAME	QTY	LENGTH	BEVELS	LABEL	NAME	QTY	LENGTH	BEVELS
A	Fascia	1	4' 6"	F45 S45	L	Joist	1	9' 9 3/4"	
B	Fascia	1	12' 8"	F45 S45	M	Joist	1	9' 3 1/2"	
C	Header	1	13' 9 1/2"		N	Joist	1	8' 7"	
D	Outer Joist	1	14' 1/2"		O	Joist	2	9' 10 1/2"	
E	Header	1	11' 7 1/4"		P	Joist	1	7' 9"	
F	Outer Joist	1	5' 8 3/4"		Q	Joist	1	7' 1"	
G	Header	1	12' 7"		R	Joist	1	6' 3 1/4"	
H	Outer Joist	1	15' 5 1/4"		S	Joist	1	15' 5"	
I	Header	1	12' 1/4"		T	Joist	1	14' 8 1/4"	
J	Joist	9	15' 2 1/4"		U	Joist	1	13' 11 1/2"	
K	Joist	4	9' 9 1/2"						

Cut Angles: L=Left, R=Right, F=Front, S=Side

Component Descriptions

COMPONENT	QTY	DESCRIPTION	WOODTYPE
Header	1	2x12x12 Treated	Pressure Treated
Decking	5	Trex Origins 5/4x6 Saddle 20' Decking	Trex
Decking	31	Trex Origins 5/4x6 Saddle 16' Decking	Trex
Decking	26	Trex Origins 5/4x6 Saddle 12' Decking	Trex
Facia	2	Trex Origins Saddle 1"x12"x12' Fascia/Trim	Trex
Spindle	44	Trex 1 3/8" x 1 3/8" x 32" Baluster Saddle	Trex
Hand Rail	1	Trex Origins 2"x4"x16' Saddle	Trex
Hand Rail	1	Trex Origins 2"x4"x12' Saddle	Trex
Railing Post	7	Trex 4" x 4" x 52" RailPost Saddle	Trex
Top Rail	1	Trex Accents 5/4"x6"x20' Saddle	Trex
Precut Stringer	2	4-Step Treated Stair Stringer	Pressure Treated
Beam	4	2x12x10 Treated	Pressure Treated
Beam	2	2x12x8 Treated	Pressure Treated
Beam	4	2x12x12 Treated	Pressure Treated
Beam	4	2x12x16 Treated	Pressure Treated
Riser	2	Trex Origins Saddle 1"x8"x12' Fascia/Trim	Trex
Joist	3	2x12x8 Treated	Pressure Treated
Step	2	Trex Origins 5/4x6 Saddle 16' Decking	Trex
Joist	9	2x12x10 Treated	Pressure Treated
Post	2	4x4x8 Treated	Pressure Treated
Joist	12	2x12x16 Treated	Pressure Treated
Gusset	1	2x12x8 Treated	Pressure Treated
outerjoist	2	2x12x16 Treated	Pressure Treated
outerjoist	1	2x12x8 Treated	Pressure Treated
Header	3	2x12x16 Treated	Pressure Treated

Trex Shopping List

For hardware details, contact your local lumberyard or consult your contractor or architect.

TREX Materials:

Material	Qty	Description
Trex	5	Trex Origins 5/4x6 Saddle 20' Decking
Trex	31	Trex Origins 5/4x6 Saddle 16' Decking
Trex	26	Trex Origins 5/4x6 Saddle 12' Decking
Trex	2	Trex Origins Saddle 1"x12"x12' Fascia/Trim
Trex	44	Trex 1 3/8" x 1 3/8" x 32" Baluster Saddle
Trex	1	Trex Origins 2"x4"x16' Saddle
Trex	1	Trex Origins 2"x4"x12' Saddle
Trex	7	Trex 4" x 4" x 52" RailPost Saddle
Trex	1	Trex Accents 5/4"x6"x20' Saddle
Trex	2	Trex Origins Saddle 1"x8"x12' Fascia/Trim
Trex	2	Trex Origins 5/4x6 Saddle 16' Decking

Trex Disclaimer & Disclosures

We want you to have fun using our software and building your Deck. However, we care about safety. Carefully read the following **Disclaimer and Disclosure**. You may proceed only if you have read this information and agree to the terms.

The suggested design is a construction guide and is NOT a finished building plan. It is your responsibility to verify its accuracy, completeness, suitability for your particular site conditions, and compliance with local building codes and practices.

DIYonline.com and Trex Company, Inc. assume no responsibility for any damages, including direct or consequential, personal injuries suffered, or property or economic losses incurred as a result of the information published on the DIYonline.com web site, Trex web site or Deck Specification Kit. Before beginning the project, review the instructions carefully. We cannot anticipate all of your working conditions or the characteristics of your materials and tools. For your safety, you should consider your own skill level and use caution, care and good judgment when following the instructions. If you have doubts, concerns or questions, consult local experts, architects, soil engineers or building authorities. Because local zoning and building codes and regulations vary greatly, you should ALWAYS CHECK WITH LOCAL AUTHORITIES TO ENSURE THAT YOUR PROJECT COMPLIES WITH ALL APPLICABLE CODES AND REGULATIONS. Always read and observe the instructions and safety precautions provided by any tool or equipment manufacturer, and follow all accepted safety procedures.

Be sure to follow the Deck construction and guidelines carefully. You are responsible for ensuring that all measurements are correct. Due to size, shape, location or other considerations, your design may require supporting structures, such as knee braces and bridging between joists, that are not included on the materials list and other information provided. **YOU ARE RESPONSIBLE FOR ENSURING THAT YOUR DESIGN IS SAFE AND STRUCTURALLY SOUND FOR ITS SIZE, LOCATION AND ANTICIPATED USE.** You are also responsible for verifying that the design and any substitutions or modifications you make meet all local building codes and regulations.

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You understand that it is your responsibility to check any and all codes associated with deck construction. It is also your responsibility to obtain any deck construction permits as required by city, county, or state agencies.