



Major Materials Specifications

Common Materials and Processes:

Conditioned Wood – All wood components are manufactured from either kiln dried Lodgepole Pine or quarter sawn kiln dried Hemlock and are conditioned with Copper Azole after all fabrication has been completed.

5-3/4" Diameter Steel Tubing – All 5-3/4" diameter steel tubing is produced from 12 gauge galvanized sheet stock, lightly sandblasted, primed and electro-statically powder coated after all fabrication has been completed.

6" Diameter Steel Tubing – All 6" diameter steel tubing is produced from 12 gauge galvanized sheet stock, lightly sandblasted, primed and electro-statically powder coated after all fabrication has been completed.

Recycled Plastic – All recycled plastic components are made from 98% post consumer recycled high density polyethylene with the remaining 2% consisting of pigments and UV inhibitors. All load bearing components are glass reinforced.

Rotationally Molded Plastic – All rotationally molded plastic components are double walled with UV stabilized polyethylene to an average $\frac{3}{16}$ inch wall thickness, unless otherwise specified.

Injection Molded Plastic - All injection molded plastic components are composed of nylon or high impact Polypropylene with UV inhibitor.

Standard Steel Tubing – All 1 inch and 1-1/4 inch steel tubing is protected with an in-line process that includes Flo-Coat® zinc galvanizing, chromate conversion, and a clear polymer coating.

Fasteners – All fasteners are either zinc plated or stainless steel based on application. All threaded fasteners installed on site include locknuts with deformed threads, nylon rings, or a thread-locking product placed on the threads of bolt.

Powder-coating - Parts that are powder-coated use a TGIC polyester powder resin that is electro-statically applied and heat cured leaving a finish that is non-porous, non-toxic, and UV stabilized. Zinc-plating or zinc rich primer is used as base coat prior to applying the powder-coat top layer. Typical thickness of powder-coating is 3 - 4 mils.

Thermoplastic-coating - The Thermoplastic-coating process varies from Powder Coating in that a functionalized polyethylene copolymer-based material is applied to heated parts dipped in a "fluidized" vat. This process leaves a finish that is non-porous, non-toxic, and UV stabilized.

Hot-dip Galvanizing - After fabrication, all non-painted steel components are galvanized with a heavy industrial grade zinc-plating.

Aluminum Casting - Aluminum castings use either a 713 T6, 356 T6, or ZN12 alloy that is tumbled to remove any sharp casting flashing and leave a smooth exterior finish.

Common Components

Standard Wood Column – Wood columns are molded from Lodgepole Pine with an outside diameter of $5\frac{13}{16}$ inches in lengths that range from 2 feet (24 inches) to 12 feet (144 inches) in 12 inch increments. The Columns are manufactured with four linear Kerfs along the length, have a center bore of $2\frac{3}{8}$ inches, 45° chamfered ends, and a set four $1\frac{1}{8}$ inch diameter holes drilled 90° apart around the circumference of the column on 12 inch centers. Polypropylene End Caps cover the ends of the columns and Hole Plugs are used to cover exposed

Eagle holes that are not filled with Eagle Fasteners. All wood columns are conditioned with Copper Azole after fabrication.

Standard Metal Column – Metal columns are fabricated from 6” galvanized steel tubing with an outside diameter of 6 inches in lengths that range from 2 feet (24 inches) to 14 feet (168 inches) in 12 inch increments. The Columns are manufactured with a set four 11/16 inch diameter holes drilled 90° apart around the circumference of the column on 12 inch centers. Aluminum end caps fitted with Polypropylene End Caps cover the ends of the columns and Hole Plugs are used to cover exposed holes that are not filled with threaded fasteners. All metal columns are lightly sandblasted, primed and electro-statically powder coated after fabrication.

Standard Wood Platform – Platforms are factory assembled from Lodgepole Pine and Hem-Fir. Platforms are constructed from the following wood components: 2 x 6 platform floor boards, 4 x 4 structural boards, and 2 x 4 skirting boards. All platforms are constructed using number 10 x 3 inch square drive stainless steel wood screws. All platform wood components are conditioned with Copper Azole after fabrication but prior to assembly.

Standard Recycled Plastic Platform – Recycled plastic platforms are factory assembled from recycled high density polyethylene. Platforms are constructed from the following components: 5/4 platform floor and doubler boards, 2 x 4 support boards, and 2 x 6 skirting boards. All platforms are constructed using number #10 square drive stainless steel screws. All support, doubler and skirting components are glass reinforced for strength.

Standard Wood Enclosure – Wood Enclosures are factory assembled using Lodgepole Pine and Hem-Fir. All enclosures are constructed with a 2 x 6 cornice and a 2 x 4 toe kick fastened to 4 x 4 supports using number 10 x 3 inch square drive stainless steel wood screws. The 2 x 4 balusters are attached with number 10 x 2¹/₂ inch square drive stainless steel wood screws. Mounting holes are located in the 4 x 4 supports for ½ inch bolts, Do-Nuts, and Eagle Fasteners. The types of enclosures produced are shown below.

Standard Recycled Plastic Enclosure – Recycled Plastic Enclosures are factory assembled using recycled high density polyethylene. All enclosures are constructed with a 2 x 6 cornice and a 2 x 4 toe kick fastened to 4 x 4 supports using number #10 x 3 inch square drive stainless steel screws. The 2 x 4 balusters are attached with number #10 x 2¹/₂ inch square drive stainless steel screws. Mounting holes are located in the 4 x 4 supports for ½ inch bolts, Do-Nuts, and Threaded Inserts.

Eagle Fastener - (U. S. Pat. No. 3,814,416) The Eagle Fastener is an expansion fastener that is die-cast from zinc/aluminum alloy and used to secure a variety of components to columns. The Eagle Fastener has been designed to securely attach to a column by expanding within a column’s Eagle Hole using fins and teeth to prevent rotation and extraction from the column. The Eagle Fastener contains a ½ inch nylon locknut to prevent loosening after assembly.

Threaded Insert – The Threaded Insert is a ½ inch expansion fastener that has been protected with a zinc/yellow dichromate finish. The Threaded Insert has been designed to securely attach to a metal column by expanding within a column’s side hole to prevent rotation and extraction from the column.

Hole Plugs – Holes Plugs are injection-molded of high-impact polypropylene plastic, with an UV inhibitor. . The purpose of the Hole Plug is to seal unused holes in columns. When installed, the back side of the part expands to lock the Hole Plug into the hole.

Do-Nut – Do-Nuts are injection-molded from Nylon in two parts, the base and the cap. Two sizes of Do-Nuts are available to cover either ½ inch bolts or ³/₈ inch bolts. Do-Nuts designed to cover ½ bolts have a maximum diameter of 1⁷/₈ inches while Do-Nuts designed to cover ³/₈ inch bolts have a maximum diameter of 1³/₈ inches. Do-Nut caps are self locking when driven into the base after final bolt tightening is accomplished. Do-Nuts provide protection against bolt head, bolt end, and nut protrusions that meet the protrusion criteria established by the ASTM and CSA standards as well as the CPSC guidelines.

Column End Caps – Column End Caps are injection-molded from high-impact polypropylene with UV inhibitor. The caps are used to cover the top end of columns. Either #10 x 1¼ inch stainless steel wood screws or #10 x ½ inch stainless steel sheet metal screws are used to attach the cap to column end.

Accessible Stair Rails – The Accessible Stair Rails are constructed from two 1.315 inch outside diameter x .083 inch wall triple-coated steel pipes bent in an “S” shape around a 12 inch radius and welded to two 2 inch x 16³/₈

inch x $\frac{3}{16}$ inch steel mounting plates. Attachment of the stair rails is made with four $\frac{1}{2}$ bolts, Do-Nuts, and Eagle Fasteners or Threaded Inserts. The assembly is powder-coated after fabrication.

Accessible Stairs - The Accessible Stairs are factory assembled from Lodgepole Pine, Hem-Fir, or Recycled Plastic Lumber using either number 10 x 3 inch or number 10 x 2 $\frac{1}{2}$ inch stainless steel screws. The stair treads are supported with a powder coated $\frac{3}{16}$ inch steel plate and two 2 x 6 Stringer Rails on each side. Each stair tread is constructed from two 2 x 6 Large Tread Boards and a 2 x 4 Small Tread Board to form steps that are 37 $\frac{1}{2}$ inches wide x 15 $\frac{1}{4}$ inches deep with a 6 inch vertical rise between steps. The top and bottom of the Accessible Stairs are attached to Standard Columns with four Stair Hangers constructed from $\frac{3}{16}$ inch steel and are attached to columns by eight $\frac{1}{2}$ inch bolts with Eagle Fasteners or Threaded Inserts. These stairs are to be used with platforms that have a 40 $\frac{1}{2}$ inch opening between the supporting columns (standard 9 Board Platform opening) at the top and the bottom of the stairs.

Accessible Handrail – The Accessible Handrail is intended to be used with the Accessible Stairs – 36 inch. It is constructed from 1.315 inch outside diameter x .109 inch wall triple-coated steel pipe welded to four $\frac{3}{16}$ inch steel mounting plates. Attachment of the handrail is with four $\frac{1}{2}$ inch bolts, Do-Nuts, and Eagle Fasteners or Threaded Inserts. Four Accessible Handrails are used with each Accessible Stairs – 36 inch and are located at 13 $\frac{1}{2}$ inches and 25 $\frac{1}{2}$ inches above the upper 2 x 6 stringer rail. The handrails are powder-coated after fabrication.

Step Ladder – The Step Ladder is factory assembled from Lodgepole Pine, Hem-Fir, or Recycled Plastic Lumber using either number 10 x 3 inch or number #10 x 2 $\frac{1}{2}$ inch stainless steel screws. The ladder treads are supported by one 2 x 6 Step Ladder Side Rails and six Step Ladder Filler Boards on each side. The treads are constructed from 2 x 6 boards and are 5 $\frac{1}{2}$ inches deep x 34 $\frac{1}{2}$ inches wide with a 12 inch vertical rise between the five treads. The top of the step ladder connects directly to Standard Columns with $\frac{1}{2}$ inch bolts, Do-Nuts, Eagle Fasteners, or Threaded Inserts. The bottom of the step ladder connects to the Access Handrail, which is footed in concrete for stability. The step ladder accesses platforms with a 40 $\frac{1}{2}$ inch opening at an elevation of 54 inches above the resilient surface.

Step Ladder Handrail – The handrails uses 1.315 inch outside diameter x .083 inch wall triple-coated steel pipe. The top of handrail attaches to two Standard Columns with a special aluminum handrail castings, Eagle Fasteners or Threaded Inserts, and $\frac{1}{2}$ inch bolts. The lower end of handrail attaches to the step ladder side rails using $\frac{3}{8}$ inch bolts and is footed in concrete.

Access Handrail – Construction of the handrail is from 1.315 inch outside diameter x .109 inch wall triple-coated steel pipe bent around a 6 inch radius to facilitate proper hand gripping. One aluminum-casting is fastened to lower end with a $\frac{3}{8}$ inch bolt and a ny-lock nut to provide attachment to a platform. The top of the handrail attaches to a column with a Rail Receptacle. Access Handrails are used with either Two or Four Board Platforms to support the outboard end of the platform as well as provide additional hand support while accessing the platform.

Ground Access Stairs - The Ground Access Stairs are factory assembled from Lodgepole Pine, Hem-Fir, or Recycled Plastic Lumber using either number #10 x 3 inch or number #10 x 2 $\frac{1}{2}$ inch stainless steel screws. The stair treads are supported with a powder coated $\frac{3}{16}$ inch steel plate and two 2 x 6 Stringer Rails on each side. Each tread is constructed from two 2 x 6 Large Tread Boards and a 2 x 4 Small Tread Board to form steps that are 37 $\frac{1}{2}$ inches wide x 15 $\frac{1}{4}$ inches deep with a 6 inch vertical rise between steps. The top of the Ground Access Stairs are attached to Standard Columns with two Stair Hangers constructed from $\frac{3}{16}$ inch steel and four $\frac{1}{2}$ inch bolts with Eagle Fasteners. The bottom of the stairs is cantilevered from the columns using the Crescent Handrail. These stairs are to be used with platforms mounted at 12 and 18 inches in elevation and have a 40 $\frac{1}{2}$ inch opening between the supporting columns (standard 9 Board Platform opening) at the top of the stairs.

Crescent Handrail – The Crescent Handrail is constructed from 1.315 inch outside diameter x .083 inch wall triple-coated steel pipe bent around a 16 inch radius to facilitate proper hand gripping. A $\frac{3}{16}$ inch steel mounting plate is welded at the top of the handrail for two $\frac{1}{2}$ inch bolts, Do-Nuts, and Eagle Fasteners or Threaded Inserts. A $\frac{1}{8}$ inch mounting plate is welded at the bottom of the handrail, which attaches to the Ground to Deck Stairs with

two $\frac{3}{8}$ inch bolts and two-way lock-nuts. The lower end of the handrail is concrete footed for stability. The entire Assembly is powder-coated after fabrication.

Platform Infill – The Platform Infill is Vacuum-Molded from $\frac{3}{16}$ inch clear polycarbonate filler. It is installed in the field between adjacent stepped standard platforms to prevent a head entrapment. The Infill is formed with six holes for attachment to platforms with either $\frac{3}{8}$ inch bolts or lag bolts.

Flat Panel – The Flat Panel is rotationally molded from UV stabilized polyethylene. The panel is $37\frac{3}{4}$ inches tall by $40\frac{5}{8}$ inches wide. Each panel has a $30\frac{1}{2}$ inch diameter round opening with 12 molded in $\frac{3}{8}$ inch T-nuts for windows, bubbles, BigTubes, etc. Four mounting holes for $\frac{1}{2}$ inch bolts, Do-Nuts, to Eagle Fasteners or Threaded Inserts are located on the outside vertical walls of the panel. A handgrip is molded along the top edge of the panel for hand support. Flat panels are used only under roofs.

Wave Panel – The Wave Panel is rotationally molded from UV stabilized polyethylene and has a contoured top for use other than under roofs. Each panel has a $30\frac{1}{2}$ inch diameter round opening with 12 molded in $\frac{3}{8}$ inch T-nuts for windows, bubbles, BigTubes, etc. Four mounting holes for $\frac{1}{2}$ inch bolts, Do-Nuts, to Eagle Fasteners or Threaded Inserts are located on the outside vertical walls of the panel.

Clubhouse and Lookout Roof – The Clubhouse and Lookout Roofs are constructed on site with either Lodgepole Pine and Hem-Fir components or Recycled Plastic components. Both roofs use 4 x 4 supports and a lower purlin connected to tops of columns with steel brackets constructed from welded and powder-coated steel $\frac{3}{16}$ inch plates. Brackets are attached to the tops of the columns with four $\frac{3}{8}$ inch x 4 inch lag bolts while attachment to the 4 x 4 supports uses $\frac{1}{2}$ inch bolts. The upper purlin is connected to supports with $\frac{3}{16}$ inch hot-dipped galvanized steel “L” brackets and $\frac{1}{2}$ inch bolts. Contoured 2 x 6 fascia boards and lap joint rafters are fastened to the purlins with number #10 x 3 inch square drive stainless steel screws. A 2 x 4 roof trim board is fastened to fascia boards with $\frac{1}{8}$ inch hot-dipped galvanized steel brackets and $\frac{1}{4}$ inch bolts.

Playhouse Roof – The Playhouse Roof is constructed on site with either Lodgepole Pine and Hem-Fir components or Recycled Plastic components. The roof uses 2 x 4 lower beams connected to tops of columns with steel brackets constructed from welded and powder-coated steel $\frac{3}{16}$ inch plates. Contoured 2 x 6 fascia boards are fastened to upper and lower beams with $\frac{3}{16}$ inch thick hot-dipped galvanized steel brackets and $\frac{3}{8}$ inch bolts. Lap joint rafters are fastened to upper and lower beams with number 14 x 3 inch square drive screws.

12-Inch Handgrip – The 12-inch Handgrip is intended to be used wherever extra hand support is desired and the fastener locations are separated by 12 inches. It is constructed from 1 inch outside diameter x .083 inch wall steel tubing, bent and welded to two $\frac{3}{16}$ inch steel mounting plates. The mounting plates are drilled for $\frac{1}{2}$ inch bolt attachments to fasteners. The Handgrip is thermo-plastic coated after fabrication

24-Inch Handgrip – The 24-inch Handgrip is the same as the 12-Inch Handgrip with the exception that the steel mounting plates for the fasteners are separated by 24 inches.

Activity Rail – The Activity Rail is intended to prevent inadvertent falls from a platform through an opening that serves a play-event, such as an Arch Climber. The top bar of the Activity Rail is constructed from 1.315 outside diameter triple-coated steel pipe and bent around a 16 inch radius to allow a passage height above a platform of $48\frac{3}{4}$ inches. Two 1 inch diameter handgrips are welded to the top bar and extend 24 inches towards the platform allowing easier access to and from a play event to the adjacent platform. The Activity Rail is mounted using four $\frac{3}{16}$ inch steel mounting plates and four $\frac{1}{2}$ bolts, Do-Nuts, and Eagle Fasteners or Threaded Inserts. The assembly is powder-coated after fabrication.

Mr. Welcome – Mr. Welcome is intended to prevent inadvertent falls from a platform through an opening that serves a play-event, such as the Boarding Net. The top bar of the Activity Rail is constructed from 1.315 outside diameter triple-coated steel pipe and bent around a 16 inch radius to allow a passage height above a platform of $39\frac{3}{4}$ inches ($27\frac{3}{4}$ inches for Mr. Welcome Jr.). Four 1.315 inch outside diameter x .109 inch wall handgrips are welded to the top bar and extend to the platform, allowing easier access to and from a play event to the adjacent platform. The top of Mr. Welcome is mounted using two $\frac{3}{16}$ inch steel mounting plates and two $\frac{1}{2}$ bolts, Do-Nuts, and Eagle Fasteners or Threaded Inserts while the bottom is attached to the platform with four number 10 x $1\frac{1}{2}$ inch wood screws. The assembly is powder-coated after fabrication.

Entry Pipe – The Entry Pipe is similar to the Activity Rail but does not have handgrips. The top rail is welded to two $\frac{3}{16}$ inch steel Face Plates. The assembly is powder-coated after fabrication.