

Steel Finish Standards

Steel connections can be an important part of many timber systems. Steel is a strong material, capable of making connections that can resist very large loads. However, as strong as steel is, it has a critical weakness. It rusts. Rust deteriorates the steel causing it to become weaker. If rust is allowed to continue, the steel member can fail at that connection, or worse, cause an entire system to fail. There are ways to protect steel from rusting. Here are a few steel finishes that are most commonly used by Harmony Timberworks to make steel connections safer:

Hot Dipped Galvanized

Pros

- Lasts a very long time
- Cost effective
- Quick turnaround time
- Can be powder coated over

Cons

- Not as attractive as powder coating
- Build up on bolt threads makes assembly difficult

Hot dipped galvanizing is when steel is dipped into a molten zinc bath. This creates a reaction which bonds a layer of zinc to the steel. Out of all the steel finishes that can be procured by Harmony Timberworks, hot dipped galvanizing creates the best possible steel protection, with the exception of the cost prohibitive stainless steel option. Add to this the fact that hot dipped galvanizing can be powder coated (at additional cost & turnaround time) and you can obtain an extremely durable product with the beauty of a colored finish.

Powder Coating

Pros

- Very attractive finish
- Choice of color
- Lasts a long time

Cons

- Colors other than black or white are very expensive
- Build up on bolt threads makes assembly difficult

Powder coating is a process by which powdered paint is sprayed onto an electrostatically charged steel member then baked in an oven to create a rigid and uniform protective layer. Most of our clientele find that a powder coated finish is the most attractive. For steel



applications that will be visible once a project is complete, powder coating is the recommended option. As long as surface abrasion is avoided, Powder coating is quite durable and requires little maintenance. Powder coating has slightly higher cost and turnaround time than that of hot dipped galvanizing, but is well worth it if aesthetics are of importance. Powder coating to a black or white finish is typical. Almost any color powder coating is available, but cost increases considerably to do so.

Stainless Steel

Pros

- Lasts a very long time

Cons

- Extremely high cost

If cost were no matter, Stainless Steel has incredible resistance to deterioration. Due to the cost of material and to added cost during the steel fabrication process, the cost of stainless can easily reach ten times that of carbon steel.

Zinc Coating

Pros

- Not as expensive
- No build up on threads
- Can be powder coated over
- Quick turnaround time
- Choice of color

Cons

- Not as durable
- Not as attractive as powder coating

Zinc Coating is where a thin layer of zinc is applied to a steel member. This thin layer, although it does not penetrate, provides significantly more protection than no finish at all, but much less protection than that of hot dipping or powder coating. There is a positive to a thin zinc coating layer. Areas such as bolt threads will get built up too much during hot dipping or powder coating. This build up creates a big headache during assembly of your system. So, while Zinc coating is not typically the route taken for ultimate protection, using it for detail work in coordination with other finishes is typical. Zinc coating can be found in clear, black, and a limited number of other colors.



Primed & Wet Painted

Pros

- Not as expensive
- Quick turnaround time

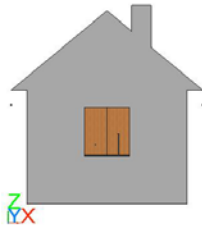
Cons

- Not as durable

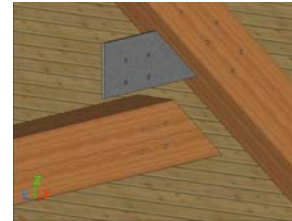
Priming and wet painting is a low cost, low durability alternative to the other above options.

The steel finishes we have just reviewed are a few of the selections that Harmony Exchange can procure. Please keep in mind that steel finish selection is one of the most important decisions you will make for your timber system if your project uses steel. Each finish selection should be based on location, application, needed turnaround time, aesthetics, and cost. In conclusion, the value of your timber system should not be measured solely by cost, but also as a measure of strength, beauty, and longevity.

Inside of Structure / Internal Steel:

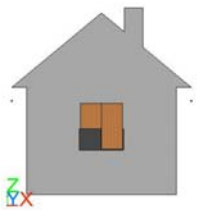


Standard: Use Galvanized Steel

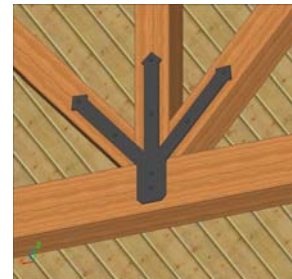


Example: Inside truss with internal steel

Inside of Structure / External Steel:

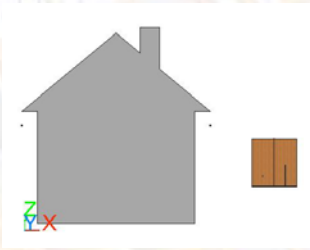


Standard: Use Powder-coated Steel

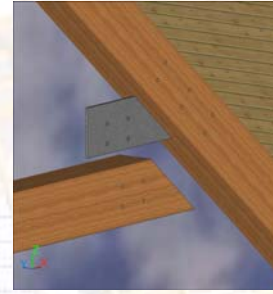


Example: Inside truss with external steel

Outside of Structure / Internal Steel:

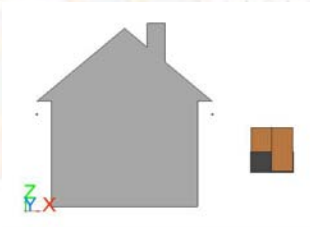


Standard: Use Galvanized Steel

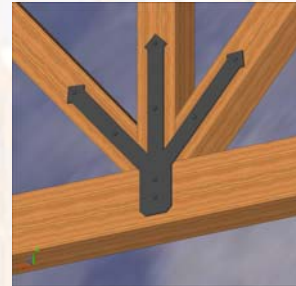


Example: Outside truss with internal steel

Outside of Structure / External Steel:



Standard: Use Powder-coated Galvanized Steel



Example: Outside truss with external steel

Please note that these are the Harmony Timberworks standard steel finish selections. Other finishes are available upon request.



Technical
Resource

Project: Steel Selection

Completed: 2007

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