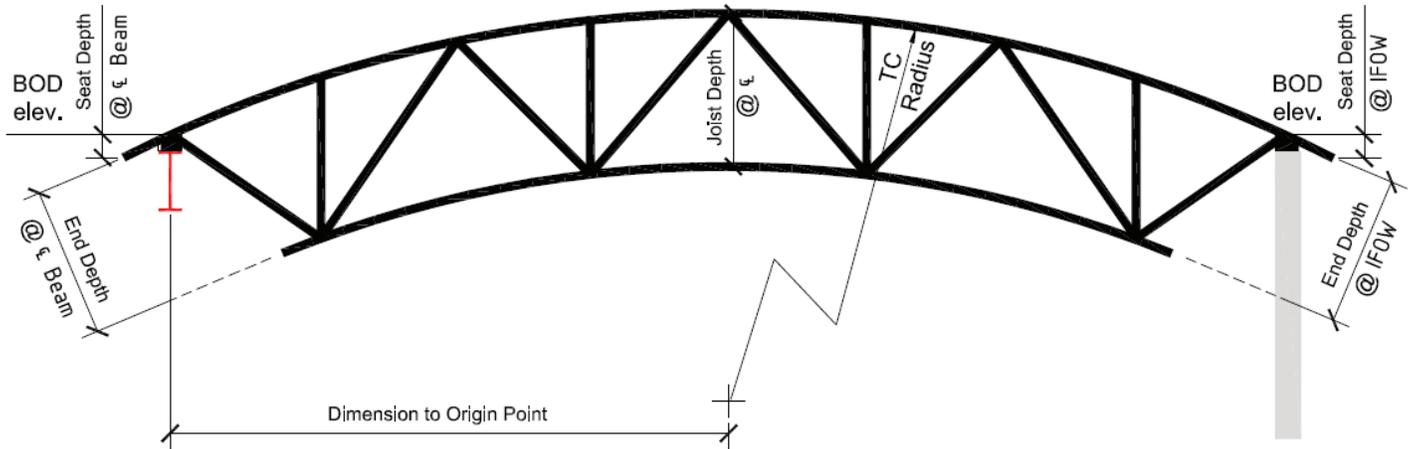


# ARCHED CHORD JOISTS

Arched Chord Joists Consist Of Cold Rolled Top And Bottom Chords. The Chords Are At The Specified Uniform Distance Apart, At Specified Radii, With A Modified Warren Web Configuration



## 1. ANALYSIS AND DESIGN PROCEDURES

Since the chords are hot rolled angles, cold formed to specified radii, Vulcraft reduces the allowable stress in the top chord dependent on the radius of the top chord.

This product has significant effects on the analysis of the entire structure because of horizontal force effects at the support points. These forces and horizontal deflection limitations must be defined by the Specifying Design Professional.

## 2. FABRICATION PROCEDURES

These joists have a cold roll formed double angle top and bottom chords, which are the only variations from Vulcraft's standard joist fabrication procedures.

## ARCHED CHORD INFORMATION CHECKLIST

Indicating the following required information on the structural drawings will expedite the pricing and detailing of the project, resulting in fewer questions on the joist approval drawings.

1. All dimensions indicated on the above diagram. Joist depth shall be indicated at mid-span.
2. If the joist profile is not symmetrical, provide the location of the origin of the radius for both the top and bottom chord radius. It is always best to show an exact outline of the desired joist profile.
3. The joist designation shall be provided in a format similar to: "36LH200/100 SP" where: "36" is the depth at mid-span, and "200" is the total uniform design load, of which "100" is live load. Loads are in plf.
4. If design loading includes non-uniform loading, a load diagram shall be provided. This diagram should include any unbalanced loads resulting from the shape of the joist profile.
5. Showing web layouts on structural drawings is not required unless there is a specific requirement. Unless instructed otherwise by a note on the structural drawings, Vulcraft will configure the web layout for the best economical and structural solution.
6. Due to the nature of an arched chord joist, a horizontal thrust force and/or horizontal deflection will be experienced by the joist. Consequently, the bearing restraints must be considered to model the joist correctly. The design criteria resulting from the modeled bearing restraints must be noted so that they can be properly considered in the design of the joist. Contact Vulcraft with any questions.

# ARCHED CHORD JOISTS

## NOTES

1. As with all joists, self-weight shall be included in the design dead load. Alternatively, it is recommended to specify on the structural drawings that joist self-weight is to be added to the design dead load by the joist manufacturer.
2. Bridging is per the Steel Joist Institute Standard Specifications for LH and DLH series joists. Rather than indicate the joist bridging on the structural drawings, it is acceptable to note on the plans that bridging is to be detailed by the joist supplier. In cases where the geometry of the joist results in the center of gravity being above the bearing point, additional rows of bridging will be required. Contact Vulcraft for recommendations.
3. In the fabrication of joists, a sufficient end depth must be provided. The appropriate end depth varies with the size, shape, and loading of the joist. The end depth is the distance between the top chord and the bottom chord or the projection of the bottom chord near the center line of the support. End depth requirements increase for bottom-chord-bearing joists and sloped joists. A minimum end depth of 12" must be provided in all cases, with 18" minimum end depth in most cases and for large joists it will increase. Contact Vulcraft for end depth requirements.
4. For arched chord joists, the overall height of the joist must be considered due to shipping concerns. Contact Vulcraft for overall height limitations.
5. If joist is bottom chord bearing on either end, supply end depth.
6. For a radius smaller than 30'-0", individual Vulcraft plants must be contacted for production restrictions. For joists that are not symmetrical, in addition to the radius, either the origin of the radius or the elevations at the center line of the support must be noted.
7. For any questions regarding the above notes and checklist, contacting the Vulcraft engineering department is encouraged.

BELOW IS AN EXAMPLE OF HOW TO EFFECTIVELY SPECIFY AN ARCHED CHORD JOIST PROFILE AND LOADING DIAGRAM. DIAGRAMS SUCH AS THESE SHOULD APPEAR ON THE STRUCTURAL DRAWINGS TO EXPEDITE THE DETAILING AND APPROVAL PROCESSES.

