TB 330-14

Radiant/Snowmelt System Design-Data Requirements

Product: Roth Hydronic Radiant and Snowmelt products and systems

Date: March 20, 2015

Purpose:

This bulletin outlines the information required from the field for Roth to provide accurate and complete quotations, hydronic radiant/snowmelt system layouts, load calculations and total design packages.

Design products:

a) Budgetary Quote:

Consists of a bill of material with or without list pricing with estimated material quantities based on project square footage or customer provided dimensional data, project specifications and or schedules.

b) System Layout:

A two dimensional Roth Wrightsoft drawing of the room/building outline displaying the hydronic loops in place, including manifold and leader locations. The System Layout does not include loop flow rate or pressure drop information.

c) Building Load Calculations:

Roth Wrightsoft generated building/snowmelt area load calculations based on: building geographical location and associated ACCA weather and earth temperature data, building envelope details (wall/ceiling/floor dimensions, window and door details, insulation, slab insulation requirements/recommendations).

d) Total Design Package:

Roth Wrightsoft generated building and system load calculations, space heating summary, hydronic device schedule, manifold summaries to include loop by loop: length, ΔT, head loss, flow rate, supply temperature, system bill of materials, layouts with and without loop tags, layout integration into customers CAD plans.

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Data requirements:

Budgetary Quote:

Roth Technical Department can produce a budgetary quotation based on fundamental dimensional data or equipment schedule from drawings. This can be transmitted in the form of a dimensioned schematic or a total square footage value for the radiant or snowmelt area. In addition, several important pieces of specification information are required to provide a useful quote:

- Tubing size
- Tubing spacing
- Min/Max loop lengths
- Installation system (over-pour, staple up, heat transfer plates, Roth panel)
- Requirements for controls and accessories.

NOTE: *Budgetary Quotes do not account for building heating/cooling loads or specific design requirements for system performance. They are intended to provide a material estimate for project valuation only.*

System Layout:

Tubing layout drawings require the following data:

- A dimensioned sketch or plan detail that allows us to replicate the design space in Wrightsoft or a PDF or CAD drawing that we can import into the Wrightsoft design space.
- Tubing spacing, including any special spacing requirements for panel edge bordering window walls etc.
- Heat source and manifold locations
- Min/max loop lengths
- Tubing size
- Installation system.

NOTE: *System Layouts are not correlated with actual building heating/cooling loads or specific design requirements for system performance. The loop tags displayed in Rightsuite® loop layout diagrams reflect the following:*

- *Loop number*
- *Length*
- *Spacing*

Building Load Calculations:
Building load calculations require the following data:

- Detailed dimensional plans identifying the radiant panel area in addition to the following
  - Wall/ceiling/floor section construction details and dimensions
  - Location and schedule of windows and doors
  - Detailed description of building insulation. Specific information regarding slab on grade or basement underfloor insulation, existing or planned, is absolutely critical.
  - Floor/surface temperatures requirements

Building Load Calculations cont.

  - Floor areas to avoid
  - Supply water temperature requirements/limitations
- Geographical location and compass orientation
- Design temperatures-indoor and outdoor

Total Design Package:
Data requirements for a total design package are a combination of those required for a system layout and building load calculations combined.

- A dimensioned sketch or plan detail that allows us to replicate the design space in Rightsuite® or a PDF or CAD drawing that we can import into the Rightsuite® design space.
- Tubing spacing, including any special spacing requirements for panel edge bordering window walls etc.
- Min/max loop lengths
- Tubing size
- Installation system
- Heat source and manifold locations
- Detailed dimensional plans identifying the radiant panel area in addition to the following
  - Wall/ceiling/floor section construction details and dimensions
  - Location and schedule of windows and doors
  - Detailed description of building insulation. Specific information regarding slab on grade or basement underfloor insulation, existing or planned, is absolutely critical.
  - Floor/surface temperatures requirements
  - Floor areas to avoid
  - Supply water temperature requirements/limitations
- Geographical location and compass orientation
- Design temperatures-indoor and outdoor
- Relevant mechanical specification sections for the heating/cooling/snowmelt system

- Option: Total design packages can be based on engineer's calculated building loads. It is extremely critical that slab/basement underfloor insulation R values and insulated area are identified and understood to insure proper design.

Residential design packages can be rendered from dimensioned sketches. Plan details in .pdf or CAD file format are preferred. For larger design areas (greater than 10000 sq ft) and or multiple floors, a CAD detail in the form of a .dwg or .dxf file is required.

Revisions:
In all project design work, revisions are a reality. Roth Technical Department anticipates requests for revisions to design products as project requirements are updated. What we would like to avoid are situations where inadequate information is provided to support the design product desired, and extensive and repetitive rework results from a "data trickle" of specification information that finds its way to us over time vs. simply providing all of the available specification information up front. Timely information updates regarding project changes/revisions in the field are helpful as well.

The Roth technical team respectfully requests the assistance of our sales channel members in helping us obtain the necessary design data required to maximize the value, accuracy and availability of Roth's Hydronic Radiant and Snowmelt design products!

Please contact the Technical Department at Roth Industries, Inc. with any additional information requirements or questions using the contact information below.