From: John Ciovacco
To: Jim Tucci; Jennifer R. Kotch
Cc: Fil Fina 3; Geoff Hoffer; Chris Winckler
Subject: RE: FT Ed geothermal
Date: Thursday, June 19, 2014 1:59:07 PM

Jen,

We see the heat load for the entire structure to be a 5 ton without the make-up air reheat. Planning on a 15kW heater for supplemental and back-up.

The heat pump requires a 240V service with a 50 amp 2-pole HACR circuit breaker and 6-2 wire run to the unit location by your electrician and the 15kW supplemental and back up electric heat requires a 240V service with a 60 amp 2-pole HACR circuit breaker and 6-2 wire and a 30 amp 2-pole HACR circuit breaker with 10-2 wire. The control system and accessories will require a 120V circuit with 20 amp breaker run to an outlet near the equipment.

Would also be good to have at least 2 GPM of source water per ton of capacity. So 10 GPM minimum – more is better. I want to know more about the temperature of the incoming water. If it gets below about 45 F it might be a problem. Deeper sources are not a problem but anything above 30 feet can fluctuate seasonally.

-John

John Ciovacco
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From: John Ciovacco
Sent: Thursday, June 19, 2014 11:59 AM
To: Jim Tucci; Jennifer R. Kotch
Cc: Fil Fina 3; Geoff Hoffer; Chris Winckler
Subject: RE: FT Ed geothermal

Jen – confirming the heat load and will get you electrical in just a bit.

Do you plan to still heat the make up air with a duct heater? What size heater is in there now? The previous calculations show something like 47K CFM needing 35K BTU/hours or about a 10kW heater. Is that what's in there? I was thinking a heat recovery ventilator might be good but that's a lot of CFM for those kind of units.

-John

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From: Jim Tucci
Sent: Wednesday, June 18, 2014 9:01 AM
To: John Ciovacco; Jennifer R. Kotch
Cc: Fil Fina 3; Geoff Hoffer; Chris Winckler
Subject: RE: FT Ed geothermal

John-
FYI, we removed a portion of the wall yesterday and there **IS** insulation in the old building. Although it isn't much… ¾" rigid. No visible R rating printed on it. I am not sure what is in the roof. I would assume the same.

From: John Ciovacco
Sent: Tuesday, June 17, 2014 4:33 PM
To: Jennifer R. Kotch
Cc: Jim Tucci; Fil Fina 3; Geoff Hoffer; Chris Winckler
Subject: RE: FT Ed geothermal

Alright Jen. I'll get you some information tomorrow.

Do you know if the air in the facility is at all caustic – will sheet metal ductwork get eaten away prematurely?

I'll catch up with Fil on the location.

Talk to you soon,

John

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From: Jennifer R. Kotch [mailto:jennifer.kotch@hrpassociates.com]
Sent: Tuesday, June 17, 2014 4:32 PM

To: John Ciovacco; Jim Tucci
Cc: Fil Fina 3; Joe Sabanos; Fil Fina Jr; Geoff Hoffer
Subject: RE: FT Ed geothermal

Hi John,

Based on the onsite meeting yesterday, It appears as if the geothermal system will be placed by the clarifier catch tank. Fil knows the area the system will go in.

What I need from you asap is the electrical demands for the system so that I can finish up the domestic electric specs. I will also need a figure that shows the location of the preliminary duct work.

In a conversation with Payson I had today, the backup heating system will utilize propane. I will spec this system out.

Thanks and let me know if you have questions.

Jen Kotch
HRP Associates, Inc.
518-877-7101 X115

From: John Ciovacco [mailto:JCiovacco@aztechgeo.com]
Sent: Tuesday, June 10, 2014 6:06 AM
To: Jim Tucci; Jennifer R. Kotch
Cc: Fil Fina 3; Joe Sabanos; Fil Fina Jr; Geoff Hoffer
Subject: RE: FT Ed geothermal

My answers in red below.

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-----Original Message-----
From: Jim Tucci
Sent: Tuesday, June 03, 2014 12:26 PM
To: Jennifer R. Kotch
Cc: Fil Fina 3; John Ciovacco; Joe Sabanos
Subject: RE: FT Ed geothermal

I will allow for John C to answer...

-----Original Message-----
From: Jennifer R. Kotch [mailto:jennifer.kotch@hrpassociates.com]
Sent: Tuesday, June 03, 2014 12:13 PM
To: Jim Tucci
Cc: Fil Fina 3; John Ciovacco; Joe Sabanos
Subject: RE: FT Ed geothermal

Will the geosystem need room in the circuit breaker? I'm assuming that its starter (etc) will be at the unit? what will the breaker demand be? We have not sized the heat pump yet but for planning purposes it may need a 240V service with a 40 amp 2-pole HACR circuit breaker and 8-2 wire run to the heat pump location and 240V service with a separate 50 amp 2-pole HACR circuit breaker and 6-2 wire for supplemental electric heat. The control system and accessories may require access to a 120V circuit with 20 amp breaker run to an outlet near the equipment as well.
I'm assuming that it will be controlled by a separate solid state controller that I will not have to worry about right now. It can be controlled by a thermostat. If remote access is needed we will need to sort out how to integrate it into other control systems. If a wifi connection was available, there are a number of wifi thermostats to provide simple remote monitoring and control.

Where will it be mounted to in the system, where the make shift desk is currently located or somewhere else? There are a wide selection of heat pump configurations. It could be on the floor, some can be wall mounted, or hanging from the ceiling. Jim might have a better sense of this at this stage. Will the water have to go thought the clarifier before entering the geo system, are we concerned about the fouling in the water gumming up the system if we use pre-treated influent water? This is certainly a concern. Some type of heat exchanger that would isolate the heat pump from the source water. The heat exchanger will need to be a type that can be cleaned, either through flushing and/or disassembly. Perhaps a plate & frame heat exchanger or some tube-in-tube type with sufficient surface area. Depending on the water's ability to contaminate and how best to clean I am not sure how much the water temp will drop after its retention time in the clarifier, Sooooo I'm all for waiting until we get this thing up given the geo system can have a 4-6 week install lead time, I do not want to get much past Oct without it in place, but this might change as I'm thinking on the fly here.
In heating mode we are looking to have the source water drop 6 to 10 degrees through the heat pump. If there is ample source water the drop in temp could be far less. Once the flow rate potential of the source water is better known we can rough out a design for heat exchanger flow rates and predict the thermal exchange in the ideal condition (clean) and how that would change as contamination builds up. It would be prudent to install an electric strip heaters as a supplemental and backup system so if the system did foul, heat would still available until the situation can be remedied. The geothermal system will require of 3 to 4 times less electricity to heat the building, which is a direct translation to savings. Like in all our installations, the cost savings and environmental benefits needs to be balanced with the cost of installation and maintenance.

Hope that helps. I will be at my son's HS graduation this morning at 10AM but feel free to call either

Fil Fina, Jr. or Geoff Hoffer for basic questions about these systems.

Jen Kotch
HRP Associates, Inc.
518-877-7101 X115

-----Original Message-----
From: Jim Tucci [mailto:JTucci@aztechtech.com]
Sent: Tuesday, June 03, 2014 10:59 AM
To: Jennifer R. Kotch
Cc: Fil Fina 3; John Ciovacco; Joe Sabanos
Subject: RE: FT Ed geothermal

I was actually waiting to see what your system flow rate # was going to be. I haven't followed through with anything at this point. I can have the guys proceed with the pilot test numbers if that is what you and Payson want.

Just let us know.

-----Original Message-----
From: Jennifer R. Kotch [mailto:jennifer.kotch@hrpassociates.com]
Sent: Tuesday, June 03, 2014 10:53 AM
To: Jim Tucci
Subject: Re: FT Ed brush clearing

How are the geothermal system plans coming? I will need them to include in the plumbing diagram. When we last spoke about this you were going I have someone look at the pilot test flow rates and see if the system was possibly and start the design phase.
Sent from my iPhone

> On Jun 3, 2014, at 10:39 AM, "Jim Tucci" <JTucci@aztechtech.com> wrote:
>
> Payson-
> Attached are some photos of the progress and additional problem areas associated with the brush clearing of the fence area. At this point we are 4 or 5 days in with some significant problem areas still existing. It is a tedious task due to the growth of the brush and vines through the fence and making removal quite difficult and time consuming.
> The growth in some areas has the potential for fence damage. I am directing our techs to carry on with their duties unless I hear different from you. I anticipate several more days at a minimum. Due to the intertwining through the fence it is like getting a hair cut 1 hair at a time.
>
> If this is not addressed the potential for fence damage and probable replacement is quite possible.
>
> Please advise if you feel this is not necessary or warranted.

>
> Thank You
>
>
>
> [cid:image002.png@01CDD9E4.F4B6E450]
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>
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