Cornell

Meghan Furton <mrf222@cornell.edu>

Re: Autodesk and AguaClara

14 messages

Monroe <monroews@gmail.com>   Tue, Oct 27, 2015 at 12:04 PM
To: Kellan Hays <kellan.hays@autodesk.com>
Cc: Maysoon Sharif <msharif@aguaclarallc.com>, Drew Hart <abh35@cornell.edu>, Serena Takada
<st587@cornell.edu>, Meghan Furton <mrf222@cornell.edu>

Dear Kellan,

The design team for the AguaClara program at Cornell has been working to improve the quality of our design
documentation and to make it easier to create the construction documents from our 3-D AutoCAD model. We
use a fully automated design process where Mathcad code creates parametric engineering designs and the
AutoCAD command line scripts to draw a 3-D model of municipal water treatment plants. We would like to
automate the process of creating slices of the 3-D model that can be used for construction prints. We've been
working with someone at AutoDESK who has created a dll that extends the command line control of the slice
command in AutoCAD, but we have not yet succeeded in creating the types of slices that we need.

Would this be a potential for the Pro Bono Project?

Best regards,

Monroe Weber-Shirk

AguaClara at Cornell
Servant leader
TCi Faculty Fellow
ACSF Faculty Fellow
Civil and Environmental Engineering
Cornell University
Hollister Hall 265
(607) 216-8445

On Wed, Oct 21, 2015 at 4:12 PM, Chuck Brown <cbrown@aguaclarallc.com> wrote:
> Hi everyone,
>
> So I wanted to connect everyone here to Kellan Hays, she's the Employee Impact Manager at Autodesk and the
> head of their new employee pro bono program that AguaClara LLC participated in over these past few months.
> Thanks to Kellan, we were able to enlist the help of three talented Autodesk employees to really polish and
> professionalize our design phase documentation, something critical that had been on the docket for awhile but
> we just hadn't been able to get to until now.
>
> Kellan and I just got off the phone and I'm excited to say that she and Autodesk are interested in pursuing
> another project with AguaClara for the next cohort! However, since I will be transitioning out before that
> happens, I want to make sure the conversation continues with the right people.
>
> So Kellan, May will be your point of contact for AguaClara LLC from here on out, and then I'd like to introduce
> Prof. Monroe Weber-Shirk (Founder and Director of AguaClara Cornell) and Drew Hart (Design Engineer for
> AguaClara Cornell). I know we touched on the opportunities to create broader collaborations and potentially
> bring students into the picture, and Monroe is definitely the person to talk to about that. And then Drew is
> actually the one who mentioned the need for creating designs that are closer to being "construction-ready," and

I'm sure he could help develop that laundry list of technical issues that might serve as the basis for the next project.

Everyone please look over the documents I've attached here, which describe the pro bono program and offer a template to define the next project so that you can get an idea of how to proceed.

I hope you all are able to drive this partnership forward and continue improving both AguaClara and this excellent program!

Take care,
Chuck

--

Chuck Brown | Director, Planning & Development
W. 510-698-9596 | Water treatment for the world
Facebook | **Twitter** | **LinkedIn**

AguaClara

Clean water, powered by gravity.

Kellan Hays <kellan.hays@autodesk.com>   Thu, Nov 5, 2015 at 1:11 PM
To: Monroe <monroews@gmail.com>
Cc: Maysoon Sharif <msharif@aguaclarallc.com>, Drew Hart <abh35@cornell.edu>, Serena Takada <st587@cornell.edu>, Meghan Furton <mrf222@cornell.edu>

Hi All,

Great to connect. I seems like there could be a good pro bono project here to address your challenge. Which Autodesker were you working with on the dll? Have you done any work with Dan Banach?

Would you take a minute today or tomorrow and complete the attached project description template? Thanks.

There are a few things that could make this project really successful, and something we could even continue into second pro bono project in 2016.

- Collaborating with students on the project

- Open source designs/code

- Engaging Autodesk software engineers

- Scoped down into specific, impactful deliverables that can be accomplished in the project period

      ○ Project run ~10 weeks with 3-4 employees volunteering 1-3 hours per week

      ○ This round of projects kick off in Feb/March

To clarify, this project is for your overall design, not for a specific location, correct? Either way could be fine, I just want to be sure that it's project-based for our employees in some way. For example, if we're working on your generic design, what is the next facility you are building and how will aid/improve your work there?

Thanks!

Kellan

From: Monroe [mailto:monroews@gmail.com]
Sent: Tuesday, October 27, 2015 12:05 PM
To: Kellan Hays
Cc: Maysoon Sharif; Drew Hart; Serena Takada; Meghan Furton
Subject: Re: Autodesk and AguaClara

[Quoted text hidden]

📄 **Pro Bono Autodesk Project Description Template.docx**
108K

Meghan Furton <mrf222@cornell.edu>   Thu, Nov 5, 2015 at 1:42 PM
To: Monroe <monroews@gmail.com>, Serena Takada <st587@cornell.edu>

Hello Monroe!

This response looks very cool! I'll have time this evening to prepare some information to send back about section cuts. Drew clarified the project a little for me in terms of what 'slices' the section blocks should look at. It seems like there should be a series of longitudinal and transversal slices which cut through the whole plant at interesting places-- in each part of each unit process, basically. The whole plant should be considered for now because the engineers in Honduras can zoom in when necessary to a particular part of the slice. We should include a lot of slices, but more importantly document using a top view of the plant where the slices are: Drew suggested inserting text into the autocad model view to annotate each slice plane.

I can send the ddl file, the instructions we are using for how to load it, and some examples of scripts we are using to generate the cuts. I'll also send Minty's construction drawings to show that top view key thing. Do you think it would be valuable to send any information about our design tool? Should I send an example autocad drawing of the plant with the text file?

I'm also not sure what to say about upcoming projects. I can ask Drew an May about this this week?

Best,

Meghan

[Quoted text hidden]

Monroe <monroews@gmail.com>   Fri, Nov 6, 2015 at 9:00 AM
To: Meghan Furton <mrf222@cornell.edu>
Cc: Serena Takada <st587@cornell.edu>

Hi Meghan,

Upcoming projects are Zamorano University and Las Vegas.

Go for this connection with AutoDesk. However, remember that this pro bono work is to begin in Feb.

Best,

Monroe Weber-Shirk

AguaClara at Cornell
Servant leader
TCi Faculty Fellow
ACSF Faculty Fellow
Civil and Environmental Engineering
Cornell University
Hollister Hall 265
(607) 216-8445

[Quoted text hidden]

Meghan Furton <mrf222@cornell.edu>   Mon, Nov 9, 2015 at 3:49 PM
To: Kellan Hays <kellan.hays@autodesk.com>
Cc: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>, Drew Hart
<abh35@cornell.edu>, Serena Takada <st587@cornell.edu>

Hello Kellan,

Here is the project description in the template format!

I also have some more information about the student progress so far on this challenge:
The autodesker we are working with is Kean Walmsley (kean.walmsley@autodesk.com) and the .ddl file he has
developed for us is attached to the email. I've also attached an example of the text files we are pasting into the
command line as well as a drawing file of one of our plants. Our first step, whenever we opan AutoCAD, is to
'netload' the .ddl file 'Sectioner.ddl' and then the command we use is 'SPTB'.

This drawing file, along with a list of variable values and a word document explaining the design, are our finished
products. We hope to create 2D section cuts of the plant to be used in construction drawings, too! An example
of the construction drawings from our partners in Honduras is attached also. We believe that more cuts than are
shown would be good to produce from the tool, and that we don't want to show the hidden lines from cuts.

I would really appreciate the chance for our student designers to work on a project like this with Autodesk! This
task would impact our overall Automated Design Tool, but a few of our specific upcoming projects are listed
below:
--Zamorano University
--Las Vegas

I hope that our challenge sounds interesting for your project!

Best,

Meghan Furton

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5 attachments

📄 **SectionCutTest.txt**
1K

📄 **Pro Bono Autodesk Project Description.docx**
104K

📄 **EtFlocSedFi (1).dwg**
16070K

📄 **Las Moras 10 Lps.pdf**
4360K

📄 **Sectioner5.zip**
13K

Microsoft Outlook   Mon, Nov 9, 2015 at 3:50
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To: mrf222@cornell.edu

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Kellan Hays (kellan.hays@autodesk.com)

This message won't be sent because it's too large.

Diagnostic information for administrators:

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kellan.hays@autodesk.com
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From: Meghan Furton <mrf222@cornell.edu>
To: Kellan Hays <kellan.hays@autodesk.com>
CC: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>,
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📄 **noname**
3K

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To: mrf222@cornell.edu

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Monroe (monroews@gmail.com)

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monroews@gmail.com
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From: Meghan Furton <mrf222@cornell.edu>
To: Kellan Hays <kellan.hays@autodesk.com>
CC: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>,
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Status: 5.2.3
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noname
3K

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<MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@cornell.edu>   PM
To: mrf222@cornell.edu

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Maysoon Sharif (msharif@aguaclarallc.com)

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Diagnostic information for administrators:

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msharif@aguaclarallc.com
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Message-ID: <CAE4sNA3XV9_cAhFr093x253C5wXExfjuFS25jRuzeDCWOTb8tA@mail.gmail.com>
Subject: Re: Autodesk and AguaClara
From: Meghan Furton <mrf222@cornell.edu>
To: Kellan Hays <kellan.hays@autodesk.com>
CC: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>,
        Drew Hart <abh35@cornell.edu>, Serena Takada <st587@cornell.edu>
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Action: failed
Status: 5.2.3
Diagnostic-Code: smtp;550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization
X-Display-Name: Maysoon Sharif

📄 **noname**
3K

Microsoft Outlook   Mon, Nov 9, 2015 at 3:50
<MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@cornell.edu>   PM
To: mrf222@cornell.edu

This message wasn't delivered to anyone because it's too large. The limit is 25 MB. This message is 27 MB.

drewhart0@gmail.com

This message won't be sent because it's too large.

Diagnostic information for administrators:

Generating server: sf-e2013-10.exchange.cornell.edu

drewhart0@gmail.com
Remote Server returned '550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization'

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         5WaKwR0oijjq8AQ6cXr7nmAQbZAq2P4d8U0Eq22IObtfjpJlYpqH+TS1u8dSOtW/aeE+
         TOq8rBQn/0DoiLCEpynunKKhF3vJp1MIL3GVJ+zSVqv6BbQo+tjZrOSC1EqruaKIutEb
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X-Gm-Message-State: ALoCoQmq/BYVSoOMNF0u9xjlelIFPcO+oSJnSnyQWO4sHk4MpVndIe3hWM4kAw
C8IS6fLEDxOkNtvgm4XLT3c9MDx+feNvlc3Pl6XGqEAgJrCYTjP0hln6nkNxO1AzOrWVMx9BP1rsNVNq298a4+
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X-Received: by 10.107.3.42 with SMTP id 42mr421245iod.83.1447102201693;
        Mon, 09 Nov 2015 12:50:01 -0800 (PST)
MIME-Version: 1.0
X-Received: by 10.107.3.42 with SMTP id 42mr420470iod.83.1447102187864; Mon,
 09 Nov 2015 12:49:47 -0800 (PST)
Received: by 10.107.202.197 with HTTP; Mon, 9 Nov 2015 12:49:44 -0800 (PST)
In-Reply-To: <e03c54cd63724c88a38dc59e0926d413@BLUPR79MB017.MGDADSK.autodesk.com>
References: <CACRgLkWNFUdyijFKFq77h2kOufi1SiaKec2a43PL3ZTmSEbh0w@mail.gmail.com>
        <CAP3R3NFypAMjOTjAqX88OiSJE9u5aWHPBhn4S6DYNBw8DBOMpg@mail.gmail.com>
        <e03c54cd63724c88a38dc59e0926d413@BLUPR79MB017.MGDADSK.autodesk.com>
Date: Mon, 9 Nov 2015 15:49:44 -0500
Message-ID: <CAE4sNA3XV9_cAhFr093x253C5wXExfjuFS25jRuzeDCWOTb8tA@mail.gmail.com>
Subject: Re: Autodesk and AguaClara
From: Meghan Furton <mrf222@cornell.edu>
To: Kellan Hays <kellan.hays@autodesk.com>
CC: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>,
        Drew Hart <abh35@cornell.edu>, Serena Takada <st587@cornell.edu>
Content-Type: multipart/mixed; boundary="001a113ed344e12ef1052421bbcf"
Return-Path: mrf222@cornell.edu
Received-SPF: Neutral (sf-e2013-10.exchange.cornell.edu: 209.85.223.181 is
 neither permitted nor denied by domain of mrf222@cornell.edu)
X-ORG-HybridRouting: ff0ce95bbe3fb82f1e32df742243ea99

Final-Recipient: rfc822;drewhart0@gmail.com
Action: failed
Status: 5.2.3
Diagnostic-Code: smtp;550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization

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📄 **noname**
3K

Microsoft Outlook   Mon, Nov 9, 2015 at 3:50
<MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@cornell.edu>   PM
To: mrf222@cornell.edu

This message wasn't delivered to anyone because it's too large. The limit is 25 MB. This message is 27 MB.

serenatakada@yahoo.com

This message won't be sent because it's too large.

serena118@aol.com

This message won't be sent because it's too large.

st587@cmail.cornell.edu

This message won't be sent because it's too large.

Diagnostic information for administrators:

Generating server: sf-e2013-09.exchange.cornell.edu

serenatakada@yahoo.com
Remote Server returned '550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization'

serena118@aol.com
Remote Server returned '550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization'

st587@cmail.cornell.edu
Remote Server returned '550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization'

Original message headers:

```
Received: from sf-e2013-07.exchange.cornell.edu (10.22.40.54) by
 sf-e2013-09.exchange.cornell.edu (10.22.40.56) with Microsoft SMTP Server
 (TLS) id 15.0.1104.5; Mon, 9 Nov 2015 15:50:05 -0500
Received: from mail-io0-f174.google.com (209.85.223.174) by
 exchange.cornell.edu (10.22.40.54) with Microsoft SMTP Server (TLS) id
 15.0.1104.5 via Frontend Transport; Mon, 9 Nov 2015 15:50:05 -0500
Received: by iody8 with SMTP id y8so198818790iod.1
        for <st587@cornell.edu>; Mon, 09 Nov 2015 12:50:05 -0800 (PST)
X-Google-DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed;
        d=1e100.net; s=20130820;
        h=x-gm-message-state:mime-version:in-reply-to:references:date
         :message-id:subject:from:to:cc:content-type;
        bh=0ToWyH2AxfOWIyIVwuKt6UEtJ19TLWYs/Kz0zZtliCo=;
        b=cxJkHwQEjOCSvIpqvRf02gVFxTYYb6V9qB2cHeI36eVboVzZwkOGQwE3A9+eNNfMrP
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         h3Ng==
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C2ZSmlN9ZBsRjcxJwUoWJ3kI8Ufgq99IZmvQBz2oCFiieTAgj7CJNTpUq6spB3IxNSxdUWabKZUjbrF9hmQOJ5wksM
Bi6Ruh13hslg==
X-Received: by 10.107.3.42 with SMTP id 42mr421313iod.83.1447102202809;
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                    Mon, 09 Nov 2015 12:50:02 -0800 (PST)
MIME-Version: 1.0
X-Received: by 10.107.3.42 with SMTP id 42mr420470iod.83.1447102187864; Mon,
 09 Nov 2015 12:49:47 -0800 (PST)
Received: by 10.107.202.197 with HTTP; Mon, 9 Nov 2015 12:49:44 -0800 (PST)
In-Reply-To: <e03c54cd63724c88a38dc59e0926d413@BLUPR79MB017.MGDADSK.autodesk.com>
References: <CACRgLkWNFUdyijFKFq77h2kOufi1SiaKec2a43PL3ZTmSEbh0w@mail.gmail.com>
        <CAP3R3NFypAMjOTjAqX88OiSJE9u5aWHPBhn4S6DYNBw8DBOMpg@mail.gmail.com>
        <e03c54cd63724c88a38dc59e0926d413@BLUPR79MB017.MGDADSK.autodesk.com>
Date: Mon, 9 Nov 2015 15:49:44 -0500
Message-ID: <CAE4sNA3XV9_cAhFr093x253C5wXExfjuFS25jRuzeDCWOTb8tA@mail.gmail.com>
Subject: Re: Autodesk and AguaClara
From: Meghan Furton <mrf222@cornell.edu>
To: Kellan Hays <kellan.hays@autodesk.com>
CC: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>,
        Drew Hart <abh35@cornell.edu>, Serena Takada <st587@cornell.edu>
Content-Type: multipart/mixed; boundary="001a113ed344e12ef1052421bbcf"
Return-Path: mrf222@cornell.edu
Received-SPF: Neutral (sf-e2013-09.exchange.cornell.edu: 209.85.223.174 is
 neither permitted nor denied by domain of mrf222@cornell.edu)
X-ORG-HybridRouting: 8698d2ec68df33b1159d3db302b8fded
 0b8e3802679568e5440760ee68343d5c de214abecf1a25b9332cf7417b2e4f2c
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Final-Recipient: rfc822;serenatakada@yahoo.com
Action: failed
Status: 5.2.3
Diagnostic-Code: smtp;550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization

Final-Recipient: rfc822;serena118@aol.com
Action: failed
Status: 5.2.3
Diagnostic-Code: smtp;550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization

Final-Recipient: rfc822;st587@cmail.cornell.edu
Action: failed
Status: 5.2.3
Diagnostic-Code: smtp;550 5.2.3 RESOLVER.RST.SendSizeLimit.Org; message too large for this organization

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📄 **noname**
3K

Meghan Furton <mrf222@cornell.edu>   Mon, Nov 9, 2015 at 3:53 PM
To: Kellan Hays <kellan.hays@autodesk.com>
Cc: Monroe Weber-Shirk <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>, Serena Takada <st587@cornell.edu>, Drew Hart <abh35@cornell.edu>

Hello Kellan,

Here is the project description in the template format!

I also have some more information about the student progress so far on this challenge:
The autodesker we are working with is Kean Walmsley (kean.walmsley@autodesk.com) and the .ddl file he has developed for us is attached to the email. I've also attached an example of the text files we are pasting into the command line as well as a drawing file of one of our plants. Our first step, whenever we opan AutoCAD, is to 'netload' the .ddl file 'Sectioner.ddl' and then the command we use is 'SPTB'.

This drawing file, along with a list of variable values and a word document explaining the design, are our finished products. We hope to create 2D section cuts of the plant to be used in construction drawings, too! An example of the construction drawings from our partners in Honduras is attached in a separate email. We believe that more cuts than are shown would be good to produce from the tool, and that we don't want to show the hidden lines from cuts.

[Quoted text hidden]
[Quoted text hidden]

---

4 attachments

SectionCutTest.txt
1K

Pro Bono Autodesk Project Description.docx
104K

EtFlocSedFi (1).dwg
16070K

Sectioner5.zip
13K

Meghan Furton <mrf222@cornell.edu>   Mon, Nov 9, 2015 at 3:56 PM
To: Kellan Hays <kellan.hays@autodesk.com>
Cc: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>, Drew Hart
<abh35@cornell.edu>, Serena Takada <st587@cornell.edu>

... and here is an example of the construction drawings to build AguaClara plants created by Agua Para el Pueblo from the 3D plant drawing sent previously. This is something like what we want our design tool to produce on its own.

Cheers,

Meghan

On Thu, Nov 5, 2015 at 1:11 PM, Kellan Hays <kellan.hays@autodesk.com> wrote:
[Quoted text hidden]

Las Moras 10 Lps.pdf
4360K

Kellan Hays <kellan.hays@autodesk.com>   Mon, Nov 16, 2015 at 10:29 AM
To: Meghan Furton <mrf222@cornell.edu>
Cc: Monroe <monroews@gmail.com>, Maysoon Sharif <msharif@aguaclarallc.com>, Drew Hart
<abh35@cornell.edu>, Serena Takada <st587@cornell.edu>

Hi Meghan,

Thanks for all the information! Discussing with our team and will get back to you asap.

Best,

Kellan

From: Meghan Furton [mailto:mrf222@cornell.edu]
Sent: Monday, November 09, 2015 3:56 PM
To: Kellan Hays
Cc: Monroe; Maysoon Sharif; Drew Hart; Serena Takada

[Quoted text hidden]

[Quoted text hidden]

Kellan Hays <kellan.hays@autodesk.com>   Mon, Nov 30, 2015 at 3:49 PM
To: Maysoon Sharif <msharif@aguaclarallc.com>
Cc: Monroe <monroews@gmail.com>, Drew Hart <abh35@cornell.edu>, Serena Takada <st587@cornell.edu>, Kean
Walmsley <kean.walmsley@autodesk.com>, Meghan Furton <mrf222@cornell.edu>

Hi May,

Thank you again for the project proposal and conversations thus far. We look forward to working with you in
2016! The cohort of pro bono projects for February is amazing.

Next stages:

-     Dec & Jan – Autodesk employee recruitment & project matching

-     Feb 15 – Employee matching announcements, team introductions, and projects kick off

Project Setup:

-     Projects run for ~10 weeks, 2-4 hours of volunteer time per employee, teams of 2-4 employees.

-     Final project scope and deliverables are decided by employees and recipient. Scope template attached.

-     We provide each employee with a pro bono best practices training. The guide is attached, and includes
the project stages for the 10 weeks.

Project blurb we will share with employees worldwide:

Help create professional AutoCAD section cuts for AguaClara's automated water treatment plant
drawing tool, by increasing flexibility and creating new MathCAD code. Work with students on their
open source platform at Cornell and help get clean water to low-income communities.

Skills Desired:

- ObjectARX

- AutoCAD

- MathCAD

- Mechanical/Civil Engineering

I will be on leave until February, but my manger, Ben Thompson, is your contact for any questions before then. Kean is also CCed here, as he has graciously offered to help with the project. I am excited to meet with you all upon my return and get this project kicked off!

Thank you again,

Kellan

---

2 attachments

📄 **Pro Bono Autodesk Project Scope Template.docx**
24K

📄 **Pro Bono Autodesk_Best Practices_FY17.pdf**
1720K