“K”

Arger Correspondence October 11, 2016 Exhibit - Part 3

Mountain Peak Winery P13-00320
Planning Commission Hearing January 4, 2017

EXHIBIT "12"

EXHIBIT "12"

EXHIBIT "12"

Subject: Re: Soda Canyon Road
Date: Wednesday, November 4, 2015 at 3:55:51 PM Mountain Standard Time
From: Steve Rivera
To: Pedroza, Alfredo

Thank you Alfredo. I started writing letters addressing this issue about six years ago and of course not only has the road condition gotten much worse, the traffic on this road has increased as well. I do understand the financial constraints but this might be a excellent time to try to move the clock forward on this long overdue project since infrastructure seems to be a political buzz word these days. I wish you the best of luck on our behalf!

Steven Rivera

riveravineyards.org
diablomag.com

> On Nov 4, 2015, at 2:49 PM, Pedroza, Alfredo <Alfredo.Pedroza@countyofnapa.org> wrote:
> Hi Steve,
> Thanks for reaching out. You're right, the road condition has deteriorated, we have PCI (Pavement Condition Index) standards with an objective of having County Roads be at 70 and unfortunately Soda Canyon Rd is well below.
> That said, this is a concern and a priority. The County will be receiving additional road funds in 2018, in addition to what we budget and allocate yearly for (I believe that number is $6.2 Million, but need to confirm). I'll continue to work with staff on this and look for opportunities to improve this road sooner. I'll follow-up in the next week or two with a better since of direction.
> Feel free to give me a call anytime, 707-225-2019.
> Thanks,
> -Alfredo
> Alfredo Pedroza
> Supervisor, District 4
> County of Napa
> Cell: 707-225-2019
> Email: alfredo.pedroza@countyofnapa.org
> Sent with Good (www.good.com)
> ---
> From: Steve Rivera
> Sent: Wednesday, November 04, 2015 10:14:25 AM
> To: Diane Dillon
> Cc: Marshall, Rick; Pedroza, Alfredo
> Subject: Re: Soda Canyon Road
> Thanks for your prompt reply and for redirecting my query. I trust I'll hear from Mr. Pedroza soon. Best wishes!
> Steven Rivera

Exhibit 12a

Thursday, August 11, 2016 at 9:18:29 AM Mountain Daylight Time

Subject: RE: Soda Canyon Road
Date: Wednesday, November 4, 2015 at 10:11:43 AM Mountain Standard Time
From: Diane Dillon
To: Steve Rivera
CC: 'Marshall, Rick (Rick.Marshall@countyofnapa.org)', Pedroza, Alfredo

Hi, Steve -

I do remember ... and it's nice to hear from you! However, I no longer represent Soda Canyon folks directly; we were required to establish new Supervisor Districts in 2011, and the "line" between District 3 and District 4 changed. The result is that - from about Oakville Crossroad going south - everything east of Silverado Trail is in District 4.

That means that Supervisor Pedroza (who was appointed to fill Bill Dodd's vacancy) is your current Supervisor. We have a protocol at the County whereby we refer constituent inquiries to the appropriate Supervisor, so I'm lateraling your email to Supervisor Pedroza as well as Rick Marshall from public works department.

Thanks again for writing,

Diane

Diane Dillon
Napa County Supervisor - District 3
(707) 963-0890
supervisor@dianedillon.net *NEW EMAIL ADDRESS*

Hi Diane,

You may remember that I wrote to you a few years ago expressing my concerns about the condition of Soda Canyon Road. I'm attempting once again to see if perhaps funds could be secured to resurface the road since it continues to show serious degradation.
I wonder if you would take time to review the roads condition now that so many cars and trucks use it with regularity and work to bring this road up to suitable standards? Thank you,

Exhibit 12 b

Steven Rivera

Subject: Fwd: Soda Canyon Road
Date: Friday, November 22, 2013 at 9:38:40 AM Mountain Standard Time
From: [redacted]
To: Steve Rivera

From: dean@[redacted]
To: hellos@[redacted]
CC: Gailtna@[redacted]

Sent: 11/22/2013 9:27:06 A.M. Pacific Standard Time
Subj: Fwd: RE: Soda Canyon Road

Neighbors,
read the below from the bottom up. If you feel like emailing Rick Marshall, feel free to do so. Sure money is tight, but some weight should be given to conditions and time waiting as well. The squeaky wheel....
Dean

-------- Original Message --------
Subject:RE: Soda Canyon Road
Date: Thu, 21 Nov 2013 18:03:24 -0600
From: Marshall, Rick <Rick.Marshall@countyofnapa.org>
To: Dodd, Bill <Bill.DODD@countyofnapa.org>, Dean Lumbert

Mr. Lumbert, thank you for your message. I always appreciate when people take the time to let us know what is happening in their areas.

We share your concern for the condition of Soda Canyon Road, as well as all of the County's 450 miles of maintained roads. There are millions of dollars' worth of needed repairs on the system, but nowhere near enough funding to accomplish everything that's needed. It has not been possible to do more in recent years, due to limited funding sources, some of which fluctuate greatly from year to year. As such, we have given priority to the major routes, which serve the most users.

The recent passage of Measure T will provide a stable ongoing source of funding with which we will be able to address concerns such as these in a more timely manner, but unfortunately its revenue does not start flowing until 2018.

In the meantime, we will keep an eye on this road and address any basic needs as soon as possible.

Rick Marshall, P.E., P.L.S.
Deputy Director of Public Works
Road Commissioner & County Surveyor
Napa County Public Works
(707) 259-8381
Rick.Marshall@countyofnapa.org

Exhibit 12C

-----Original Message-----
From: Dodd, Bill
Sent: Monday, November 18, 2013 3:57 PM
To: 'dean'
Cc: Marshall, Rick
Subject: RE: Soda Canyon Road

Hi Dean

I am familiar with the deplorable condition of your road. I have passed this on to Rich Marshall an d he might be able to shed some light on the situation.

Thanks

Bill

-----Original Message-----
From: dean [mailto:
Sent: Friday, November 15, 2013 1:13 PM
To: Dodd, Bill
Subject: Soda Canyon Road

Dear Supervisor Dodd,

My wife and I have owned property on Soda Canyon Rd. since 1988, and have made our home there since 1996. We are six miles up the road from Silverado Trail. When we bought our property twenty-five yea rs ago, Soda Canyon Road was in dire need of resurfacing. Since then, ruts have been patched, and st riping has been done, but that's about it. We now have many more hundreds of acres of vineyards plan ted by Krupps, Mondovi's, Trincheros and other wineries/owners, and many more residents and workers pass over Soda Canyon Road every day. But Soda Canyon Road has been passed by for major work all the se years. A few weeks ago I hit a pothole so bad that the emergency roll bar in my car actually popp ed up.

I am requesting that you do whatever is in your power to get our road on the list for a much needed resurfacing. I know that county funds are not in overabundant supply, but please do what you can.

Thank you for reading this email.

Yours truly from a fellow Rotarian,

Dean Lumbert

Exhibit 12 d

EXHIBIT “13”

EXHIBIT “13”

EXHIBIT “13”

TRANSCRIPT OF PROCEEDINGS

NAPA, CALIFORNIA

WEDNESDAY, JULY 20, 2016

REPORTED BY:

JOANNE BALBONI, CSR 10206

jobalboni10206@comcast.net

the production numbers, and I don't know if you feel qualified at this time to address those. And Mr. Bertlett, I see you here. So perhaps you are the most appropriate individual to answer my question.

MR. BARTLETT: If this is regarding actual tonnage and grape production, I'm going to defer to Mr. Buckland on that. I will state that Mr. Buckland and I have conferred on this. One other part of my business is vineyard development as well. We do perform that. And I have reviewed Mr. Buckland's numbers, and I do agree with his assessment of this.

MR. BASAYNE: Thank you, Mr. Bartlett.

MR. BUCKLAND: Thank you. Garrett Buckland, Premier Viticultural SERVICES, 1427 Jefferson Street, Napa. I've been working with this client since they bought the vineyard.

Some of the calculations that we used in that data that you guys have in front of you to arrive at the 92,000 roughly gallons of production are based on current site conditions. So what we can actually achieve on the vineyard, given some of our varieties.

It takes into account our winemaking production methods, which generally yield about 165 gallons per ton. Obviously, that's different by variety. White grapes are higher. Tempranillo, Malbec, some of the

other high-yielding grapes that we have on site do yield significantly more than 165 gallons per ton. So we fully expect in full production to be producing up to 600 tons a year.

MR. BASAYNE: So just to speak more conceptually about grape-growing, tonnage, and the terrain, certainly when we are looking at valley floor grapes, we are looking at, in some cases, proximity, the water table that allows for potentially a more vegetative growth that would cause the grapes to potentially swell up and have more tonnage.

When you are talking about hillside grapes, you tend to see more stressed-out grapes that, of course, would yield lower numbers potentially or in some cases.

So this particular site is in some respects a blend of the two, and so you are not looking at extremely low yields because there's a water table that the roots can reach, and -- but I just want to solicit your take on that, and maybe just describe a bit about how you come up with the numbers on tonnage per acre.

MR. BUCKLAND: Sure. So the county uses a four-ton-per-acre average, which I think is a great average if you apply it across every scenario. Tonnage is largely elective, you know, in high-end grape growing. So there are some people who are very dogmatic

about producing only two and a half, three tons per acre, and others that are not so dogmatic in their winemaking.

At our particular location, even though we are on a mountainside, the soil conditions, the conditions of the property are not necessarily consistent with perhaps the rockiest vineyard you might get in that location. We are on the Foss Valley plateau there. And if you dig down deep, there's plenty of soil mimicking, what one might find actually on some of the valley floor locations.

So at the current project site, we routinely can get yields -- again, it's variety dependent -- that average five tons an acre or more in some cases. And then also it fits with our desired wine quality, which is a lower alcohol wine and, obviously, something that's specific to our business, maybe not anyone else's.

And then at our other property where we have over 80 acres, as we go through and replant these vineyards in the future, we fully expect to get those types of yields.

The previous owners supplied us with data from what they used to do. And they would routinely get five tons per acre in practice, and so we know that it can be done. It will be done. It's part of our

business plan, and obviously we want to give ourselves a little bit of room for the inevitable change in season where we might get 10 percent more crop than we actually are looking for so that we don't have to come back here in three years and ask you for, you know, a modification to the permit.

MR. BASAYNE: So Mr. Buckland, just with regard to the total acreage that we are looking at -- we've heard different numbers from members of the public and so forth -- could you just walk us through the total acreage that you'll be relying upon in creating the production levels?

MR. BUCKLAND: Yeah. So these numbers were derived from 112 total acres that's currently on site that's using the Acora (phonetic) Vineyard as well. We do -- it was mentioned a minute ago that we do have a leased site as well, which is an adjacent property.

The total production at 92,000 gallons coming in under 100,000 gallons is expected from largely that Acora vineyard, which is the base producer there, and then also on site, which is the Mountain Peak Vineyard site.

In terms of the respective yields currently, we are seeing on site at the Mountain Peak Vineyards more than five tons per acre and a lot of varieties. As we

go through replant, modernize, get some different architecture for pruning, different spacings in our vineyard, we are obviously looking at yield as a big component. This land is not inexpensive. So obviously we need to have the right return per acre, and that's one key to this.

MR. BASAYNE: And so where are we today just in terms of total production for the available vineyard?

MR. BUCKLAND: Yeah. So currently, there's a model of -- we are not taking all of the fruit currently obviously because we don't have a winery to crush that at, and it's very expensive in the custom crush world to do this. And more importantly, we don't really have the control as we would get within an estate winery. So there's a lot of fruit that is sold.

If you look back at the historical records for all these properties, we are currently doing somewhere between 450 and 500 tons without a problem.

MR. BASAYNE: Okay. Great. Thank you for that assessment and information. That gives us a good picture.

MR. BUCKLAND: Great. And any additional questions, I'm right over here.

MR. BASAYNE: Great. Thank you.

MR. APALLAS: Mr. Chair, may I --

EXHIBIT “14”

EXHIBIT “14”

EXHIBIT “14”

LEED Certification Fees

DOWNLOAD PDF

Registration and Certification Fees

Registration is a flat fee paid up front at the time of registration; rates are based on the date of registration. The certification fee is based your project's rating system and size; it is calculated and paid when the project team submits documentation for review in LEED Online. The fees for either the standard and split review cover both the preliminary and final reviews.

Please note: Registration and certification fees are subject to change and are calculated on the dates of registration and certification submission.

Choose from the rating systems and programs in the tabs below to review registration and certification fees.

You'll notice discounted pricing options for USGBC members. Discounts are available based on the membership status of either the owner or the project administrator for a given LEED project.

Visit our payment help section to search for frequently asked questions. If you need assistance at any time, please call, email, or live chat with us.

Building Design and Construction Fees

Building Design and Construction Fees	ORGANIZATIONAL LEVEL OR NON-MEMBERS	SILVER, GOLD AND PLATINUM LEVEL MEMBERS	MEMBER SAVINGS
REGISTRATION	$1,200	$900	$300
PRECERTIFICATION REVIEW (optional, LEED CS only)			
Flat fee (per building)	$4,250	$3,250	**$1,000**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
COMBINED REVIEW: DESIGN & CONSTRUCTION			
Project gross floor area (excluding parking): less than 50,000 sq ft	$2,750	$2,250	**$500**
Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.055/sf	$0.045/sf	**$0.01/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$27,500	$22,500	**$5,000**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	+ $10,000		
SPLIT REVIEW: DESIGN			
Project gross floor area (excluding parking): less than 50,000 sq ft	$2,250	$2,000	**$250**

Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.045/sf	$0.04/sf	**$0.005/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$22,500	$20,000	**$2,500**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
SPLIT REVIEW: CONSTRUCTION			
Project gross floor area (excluding parking): less than 50,000 sq ft	$750	$500	**$250**
Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.015/sf	$0.01/sf	**$0.005/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$7,500	$5,000	**$2,500**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
APPEALS			
Complex credits	$800/credit		
All other credits	$500/credit		
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	+ $500/credit		
FORMAL INQUIRIES			
Project CIRs	$220/credit		

Interior Design and Construction Fees

Interior Design and Construction Fees	ORGANIZATIONAL LEVEL OR NON-MEMBERS	SILVER, GOLD AND PLATINUM LEVEL MEMBERS	MEMBER SAVINGS
REGISTRATION	**$1,200**	**$900**	**$300**
COMBINED REVIEW: DESIGN & CONSTRUCTION			
Project gross floor area (excluding parking): less than 50,000 sq ft	$2,750	$2,250	**$500**
Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.055/sf	$0.045/sf	**$0.01/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$27,500	$22,500	**$5,000**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$10,000		
SPLIT REVIEW: DESIGN			
Project gross floor area (excluding parking): less than 50,000 sq ft	$2,250	$2,000	**$250**
Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.045/sf	$0.04/sf	**$0.005/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$22,500	$20,000	**$2,500**

Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
SPLIT REVIEW: CONSTRUCTION			
Project gross floor area (excluding parking): less than 50,000 sq ft	$750	$500	**$250**
Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.015/sf	$0.01/sf	**$0.005/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$7,500	$5,000	**$2,500**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
APPEALS			
Complex credits	$800/credit		
All other credits	$500/credit		
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	+ $500/credit		
FORMAL INQUIRIES			
Project CIRs	$220/credit		

Building Operations and Maintenance Fees

Operations and Maintenance Fees	ORGANIZATIONAL LEVEL OR NON-MEMBERS	SILVER, GOLD AND PLATINUM LEVEL MEMBERS	MEMBER SAVINGS
REGISTRATION	**$1,200**	**$900**	**$300**
Recertification registration (recertification is required within five years of LEED O+M certification)	Free		
INITIAL REVIEW			
Project gross floor area (excluding parking): less than 50,000 sq ft	$2,000	$1,500	**$500**
Project gross floor area (excluding parking): 50,000-500,000 sq ft	$0.04/sf	$0.03/sf	**$0.01/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$20,000	$15,000	**$5,000**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$10,000		
RECERTIFICATION REVIEW			
Project gross floor area (excluding parking): less than 50,000 sq ft	$2,000	$1,500	**$500**
Project gross floor area			

(excluding parking): 50,000-500,000 sq ft	$0.04/sf	$0.03/sf	**$0.01/sf**
Project gross floor area (excluding parking): more than 500,000 sq ft	$20,000	$15,000	**$5,000**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$10,000		
APPEALS			
Complex credits	$800/credit		
All other credits	$500/credit		
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	+ $500/credit		
FORMAL INQUIRIES			
Project CIRs	$220/credit		

Neighborhood Development Fees

Neighborhood Development Fees	FIRST 20 ACRES	PER ACRE OVER 20
REGISTRATION	$1,500/PROJECT	
Smart Location and Linkage (SLL) Prerequisite Review (Optional for LEED v2009)	$2,250	
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000	
Smart Location and Linkage (SLL) and Neighborhood Pattern and Design (NPD) Prerequisite Review (Optional for LEED v4)	$5,000	
Expedited review (reduce from 20-25 days to 10-12, available based on GBCI review capacity)	$5,000	
Initial Stage Review	$18,000	$350/acre
Expedited review (reduce from 30-35 business days to 15-17, available based on GBCI review capacity)	$25,000	
Subsequent Stage Review	$10,000	$350/acre
Expedited review (reduce from 30-35 business days to 15-17, available based on GBCI review capacity)	$15,000	
APPEALS		
All credits	$500 per credit	
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	plus $500 per credit	

All LEED ND projects larger than 320 acres must contact GBCI about pricing.

All projects are subject to the Initial Stage Review fee, which includes both a Preliminary and Final Review with GBCI. Projects are only subject to a Subsequent Stage Review fee if they have previously successfully completed a stage of LEED ND certification and are returning for another round of review.

Homes Fees

Note: Additional fees will be charged by the verification team - contact your team for more information.

Homes Fees	ORGANIZATIONAL LEVEL OR NON-MEMBERS	SILVER, GOLD AND PLATINUM LEVEL MEMBERS	MEMBER SAVINGS
SINGLE FAMILY HOUSING (COST PER HOME)			
Registration (1-9 homes)	$225	$150	**$75**
Registration (10-24 homes)	$200	$125	**$75**
Registration (25-49 homes)	$175	$100	**$75**
Registration (50-99 homes)	$150	$75	**$75**
Registration (100 or more homes)	$125	$50	**$75**
Certification (1 home)	$300	$225	**$75**
Certification (per batch submittal)	$235 per batch + $75 per home	$175 per batch + $50 per home	**$50 $25 per home**
LOW-RISE MULTI-FAMILY HOUSING (COST PER BUILDING)			
Registration	$900	$750	**$150**
Certification (less than 50 units)	$0.045 psf	$0.035 psf	**$0.010 psf**
Certification (50 or more units)	$0.040 psf	$0.030 psf	**$0.010 psf**
MID-RISE MULTI-FAMILY HOUSING (COST PER BUILDING)			
Registration	$1,050	$900	**$150**
Certification (less than 50 units)	$0.045 psf	$0.035 psf	**$0.010 psf**
Certification (50 or more units)	$0.040 psf	$0.030 psf	**$0.010 psf**

Campus Fees

Campus Fees	ORGANIZATIONAL LEVEL OR NON-MEMBERS	SILVER, GOLD AND PLATINUM LEVEL MEMBERS	MEMBER SAVINGS
CAMPUS APPROACH (MASTER SITE)			
Master Site registration	$1,200	$900	**$300**
Each individual on-campus project registration	$1,200 per building or space	$900 per building or space	**$300 per building or space**
PRECERTIFICATION REVIEW (optional, GBCI only)			
Master Site	Cannot be submitted for precertification		
Each individual on-campus project	$4,250	$3,250	**$1,000**
COMBINED REVIEW: DESIGN AND CONSTRUCTION & OPERATIONS AND MAINTENANCE			
Master Site	$2,000	$1,500	**$500**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$10,000		
Each individual on-campus project	20% off standard certification fees[1]		
SPLIT REVIEW: DESIGN			

Master Site	$1,500	$1,200	**$300**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
Each individual on campus project	20% off standard certification fees*		
SPLIT REVIEW, CONSTRUCTION			
Master Site	$750	$500	**$250**
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	$5,000		
Each individual on-campus project	20% off standard certification fees*		

*Please note that Group projects are not eligible for the 20% discount on certification fees even if they are claiming campus credits from a Master Site

GROUP CERTIFICATION APPROACH			
Registration*	$1,200 per building or space within group	$900 per building or space within group	**$300 per building**
PRECERTIFICATION REVIEW (LEED v4 only)			
Group project certification*	Standard certification fees as calculated per building or space within the group project		

*Registration, precertification review (if Surity), and certification review fees for group projects are equivalent to what would be charged if each building or space within the group were registered and reviewed as a separate LEED project; however, fees for appeals and formal inquiries are assessed per group project, not per building or space within the group.

ALL PROJECTS (CAMPUS AND GROUP)	
APPEALS	
Complex credits	$800 per credit
All other credits	$500 per credit
Expedited review (reduce from 20-25 business days to 10-12, available based on GBCI review capacity)	+ $500/credit

Volume Program Fees

Volume Fees	GOLD AND PLATINUM LEVEL MEMBERS*
PROGRAM ADMISSION FEE	$10,000
PROTOTYPE FEE	$30,000
VOLUME PROJECTS FEE	
Projects 1-3	$2,000 per project
Projects 4+	$2,000 maximum per project
ADDITIONAL FEES OR SERVICES	
Additional credit, re-precertified credit, additional credit approach, appeal, or CIR Review (prototype)	$1,000
Individual credit, appeal, or CIR Review (volume project)	$500
Additional or customized training	$5,000 per training
Remediation plan (if required)	$5,000

EXHIBIT "15"

EXHIBIT "15"

EXHIBIT "15"

Understanding the Cost of LEED-NC Project Certification

Update: Cost of LEED v4

LEEDuser is now offering a report on the Cost of LEED v4. The report describes, for each prerequisite and credit in LEED v4, what strategies you'll want to use, and what they are likely to cost. In a 10-page case study, the report takes a medical office building certified LEED Gold under LEED 2009, and performs a virtual upgrade to LEED v4, with details on cost. Get the Cost of LEED v4 here

What does LEED-NC cost?

How much does LEED certification cost? Earning a LEED certification for a project involves several different types of costs, and you have to consider each separately to get an accurate picture.

Let's envision the cost of LEED as an inverted pyramid with five levels from bottom to top. The bottom level is both the smallest (in size and cost) and the top level is potentially the biggest, but also a place where you have a lot of leeway. We'll start at the bottom.

1. The fees

The most direct cost is also the smallest: the fees you pay to the Green Building Certification Institute (GBCI) to register and then to certify your project. These are roughly 3¢–5¢ per square foot for New Construction, depending on the size of the project and whether or not you get the USGBC member discount.

2. Cost of documentation time and effort

Next up the cost pyramid is the time and effort that someone has to put into compiling and submitting the LEED documentation and generally managing the compliance process.

This cost could be for an outside consultant hired just for that task, someone on the staff of the design firm, the contractor, or the owner. This is a big project for someone doing it for the first time, and not such a big deal for someone who has done it enough to have figured out the process and created or purchased effective tracking systems.

It helps if the team is experienced and each person doesn't need too much coaching to provide her pieces of the documentation. It also depends how many credits you're going after, and, to some extent, which ones. A few hundred hours to pull everything together for a big complicated project is not out of the ordinary; simple and small projects should take less time and effort.

3. Cost of extra research and design

At the third level, your baseline starts to become very relevant.

If your baseline is the cost to have a design team create a variant on their last few non-LEED projects, then designing to meet LEED standards will take some extra effort. But these added costs shouldn't be attributed just to LEED—they are the costs of getting a better building.
To realize any high-performing building the team has to develop a range of scenarios, run simulations to determine how they will perform and prepare cost estimates to price them out. They also have to investigate alternative products and materials and explore the feasibility of new technologies. All these steps take time and effort—how much depends a lot on how experienced the team is and how aggressive the performance goals are for the project.

4. The cost of commissioning and modeling for compliance

LEED introduces a few requirements that add costs if they are not already part of the scope of the project. The most obvious of these is commissioning. At $0.50–$1.00 per square foot (or more for a complex building), commissioning may seem like a big investment, but it's cheap compared to the cost of call-backs, fixes, and inefficiencies that are likely if you don't do it. For this reason, many large owners, including the federal General Services Administration, require commissioning for all of their projects, so for them it is not an added cost.

Energy modeling is trickier. While energy modeling should be used to inform the design process for every building, they are most useful during early design phases. The models that have to be run for LEED documentation, on the other hand, are an added step, done late in the design process and often with different parameters. Those models, or models like them, are also required by code in some places. If the models aren't code-required then the LEED-specific model does represent an added cost that starts at $5,000–$10,000 and goes up, depending on the complexity of the project. For small projects it is possible to earn a few LEED energy points using the prescriptive path without doing such a model.

Another LEED-specific action—tied to an optional credit, EAc5 in LEED-NC—is to create a measurement and verification (M&V) plan and install monitoring devices needed to track performance. If you wouldn't be doing this, then the monitoring equipment and writing and implementing the M&V plan require cost premiums, which are explored in the "The Cost of LEED" report. Like commissioning and energy modeling, M&V brings benefits—it's the only way to know if your high-performance building is really performing as designed.

Construction cost premiums for LEED credits such as WEp1 Water Use Reduction are highly dependent on the savings being attempted and which strategies are chosen to get there. This table from the Cost of LEED report lays out the options.

5. Costs of construction

Finally, we get to the top of our inverted pyramid, and what might be the biggest part of the cost picture: the hard costs of construction.

If the design team is experienced and the goals aren't too aggressive, there may be no overall added cost because every cost premium has been offset with savings somewhere else. (For example, a smaller HVAC system resulting from a more efficient envelope.) We know this is possible because lots of projects achieve LEED certification on budgets that were set before LEED was introduced as a requirement. However, various studies have targeted a typical premium for LEED projects at 2%–15%, with the high end including a lot of on-site renewable energy generation for LEED-NC EAc2.

Managing costs of construction

To manage those costs you have to know, at least roughly, the price of a range of specific measures. It helps to know the following for example:

- Demand-controlled ventilation adds about $1/cfm to the cost of a standard ventilation system
- Bike racks will cost about $5 per full-time equivalent (FTE)
- Showers and changing rooms will cost about $400 per FTE.

These figures, and many more, come from "The Cost of LEED"—a new report from BuildingGreen.

The Cost of LEED report

Going credit-by-credit through LEED for New Construction v2009 (LEED-NC), "The Cost of LEED" itemizes all the common approaches to achieving the performance that the credit requires and offers the view of an experienced cost estimator on the cost implications of adopting those technologies or design solutions.

"The Cost of LEED" can't tell you what it might cost to locate your project near mass-transit for SSc4.1 Alternative Transportation—that's too location and project specific for even a rough guess. But it can suggest a figure to put into your budget for any one of hundreds of specific technologies, and it identifies the other credits that might also benefit from that measure (so you can consider the appropriate synergistic benefits).

"The Cost of LEED v2009" is available for purchase as a PDF.

"The Cost of LEED v4" is also available for purchase as a PDF.

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Architect Frank Gehry talks LEED and the future of green building

By Abby Leonard
June 14, 2010

Photos: Left-AP Photo/Isaac Brekken, Right: Flickr/mikel puga

Frank Gehry, the Pritzker Prize-winning architect best known for his titanium-scaled landmarks like the Guggenheim Museum in Bilbao, the Walt Disney Concert Hall in downtown Los Angeles and the Experience Music Project in Seattle, among others, stirred up controversy last month when he reportedly called LEED – an internationally recognized green building certification system – "bogus stuff" and told Bloomberg Businessweek that green building had become "fetishized," like wearing an American flag pin.

While experts say LEED has helped spur sustainable building in this country, there is a growing chorus of critics saying the system allows developers to reap the public relations benefits of building "green," without necessarily ensuring sustainability.

Need to Know spoke with Gehry to find out what he really thinks about green building, the LEED certification process and the future of sustainable architecture.

Abigail Leonard: Were you surprised by the negative reactions to your comments about LEED?

Frank Gehry: Yes I was surprised. But I wasn't saying what they reported I said. I never said I was opposed to the LEED program or to green building – I'm not.

Leonard: How important is it, in your view, to "build green"?

Gehry: I think [global warming] is a crisis, we're led to believe that by our scientists who seem to have a pretty good idea of what's going on, so we have to address it if we want to survive on this planet. Of course there are also some people making hay out of it and using the issue for financial gain, but green building is clearly something architects need to be concerned with.

Leonard: Is the LEED program a valid way to encourage that type of design?

Gehry: It is, but it's one way among many. A lot of our clients don't apply for the LEED certification because it's complicated and in their view, they simply don't need it.

There are other ways to encourage green building. For example, we did the Novartis building in Switzerland.

They don't use the LEED program over there, the government just says this is what you can and can't do, and things have to be built in a sustainable way. So really it's a political thing: People taking responsibility on an individual level combined with government programs that give mandates that say "this is how we're going to require people to

build." Our federal government is trying to take steps in that direction. I just met with someone from the Obama administration, they are trying to enact tougher standards, but they're having some trouble.


Novartis Building. Photo © Thomas Mayer

Leonard: To use the Novartis building as an example, what is the Swiss government doing that ours isn't? What do you think the government's role should be in this?

Gehry: They set very particular standards: The Swiss government said the Novartis building couldn't be air-conditioned. So we had to come up with another way to regulate the temperature. We built it entirely out of glass and cooled it with a geothermal system. The roof panels were made with photovoltaic glass that generates energy. And there is an opening at the top that lets hot air out — like a teepee. In the end, there's no one way to do it, you have to be creative.

Leonard: So pressure should come from government at the top and builders will respond?

Gehry: In an ideal world, pressure should come from below and from the top.

Leonard: Some critics have taken issue with LEED's point system, which they say doesn't always produce the most environmentally friendly buildings. The most commonly sited example is that developers get the same number of points for installing a bike rack as they do for a complex, and expensive, water recycling system. Do you think the point system is useful?

Gehry: Maybe you need the point system to energize this type of building, but I'm not sure it's necessary. The best way would be a political initiative that requires people to address these issues in order to get a building permit. Then the government can incentivize sustainable building through subsidies and various other things. But this is a global issue, so you need programs that not only we agree on but also that the Russians and the Chinese agree on.

Leonard: In this country, do you think there's a big enough push to build green that it could happen without government mandates?

Gehry: On certain projects, on big public projects, people definitely are interested in making them greener, but on smaller projects with tight budgets it can be harder. People don't feel like they're making enough of a dent for it to be worth it.

Leonard: There's certainly a conception that you have to make a choice between building something green and building something beautiful. Can you combine aesthetics and sustainability?

Gehry: It is true that we find there a lot of buildings being built with sustainability in mind, but they're not nice to be in. There has to be some sense of value, so an environmentally friendly building also has to be user friendly. Sometimes those conflicts seem to raise their ugly head[s].

Leonard: Aside from the aesthetics issue, what are the major challenges to building more environmentally friendly buildings — why isn't everyone doing it?

Gehry: Well for example, I met with a German energy company that wanted to build green. And they brought every bloody expert on this topic to my office in Santa Monica....They wanted to use geothermal or wind energy but you just couldn't make it work. They sat on a site where there was not enough wind to warrant wind energy; their offices closed at 5 p.m., so there was no need to conserve energy during the day to light it at night because there was no one was there at night. So it can be tough, and each case is individual.

Leonard: What was the end result – were you able to get close to what they'd hoped for?

Gehry: I think so. We created a heating system that met their criteria. I even proposed that they put a bunch of stationary bikes at the front of the building to generate energy; we built two of them in fact. ... I spend an hour on that cardio thing every day, and I'd be happier if I created energy while I was exercising. These small things could make a huge difference: Installing skylights or if everybody put a put water pipes and solar boilers on their roofs like they do in Israel, it would reduce electricity consumption. Obviously it's complicated – solar boilers probably wouldn't work in the Northeast for example – but there are steps we could take and political mandates would help.

Leonard: Stationary bikes for energy, that's a pretty creative solution. Anything else you've been considering doing?

Gehry: One thing I was messing around with is how to get a building skin that's photovoltaic. I saw an example that JPL did 20 year ago, a piece of photovoltaic material that had bubbles in it, it was really beautiful. They stopped making it, but if I'd had it, I would have built the Disney Center with it.

Leonard: What can be done to encourage architects to build with those sorts of materials?

Gehry: One of the crucial issues is to have designers work with the people creating the technology to make it more appealing to put on buildings. So material that looks like what we already use to create buildings, but that is actually more energy efficient — smart bricks, smart concrete, smart metal. Then it would be a lot easier to incorporate it into buildings without having to redesign the entire structure. I'm hoping that will happen sooner or later.

We've been working with a company that makes ductile. It's a concrete substitute that uses 50 percent less concrete in the mix, reducing the carbon footprint by 50 percent. Concrete contributes 8 percent of the world's overall carbon footprint so this concrete would cut that in half and that would make a tremendous difference.

Leonard: Are there other solutions that perhaps aren't getting enough attention?

Gehry: There are issues that arise that honestly just aren't as sexy. For example, a lot of materials in the construction industry are wasted because they're delivered too early. We're working on a computer program with the French company Gasteau Systems that helps organize construction.

You can analyze traffic patterns to figure out a way to create a schedule for delivery. It's a big waste of materials otherwise and that's a huge thing when you're trying to create a sustainable system. There also a lot of wasted that could be saved if you shipped things more effectively. There are a lot of things like that that we run into that probably don't get as much attention as they should.


Photo: Flickr/dirac3000

Leonard: What do you think it will take to make a real, substantive change?

Gehry: Creativity and a will to do it. And a lot of it is common sense. I was in Peru and visited a building near Lima built by the Incas. It was low in height, with no windows at all, but all the way in the back there was air movement. And I couldn't figure out how they'd done it, it was incredible. So there's a lot of primitive stuff that's been done that doesn't require advanced technologies that we should focus on. And when we do focus on technology it should be with an aesthetic sensibility. And above all we need to take the issue seriously so that our clients and our partners in the construction industry become aware of the possibilities.