

Ben R. Baltzer

From: Teresa Patterson <tpatterson@udfcd.org>
Sent: Wednesday, March 16, 2016 7:06 PM
To: adrucker@manhard.com
Cc: Jenna Bockey; Russ Burrows; Rick Moore; Mark Wilson; Barbara Chongtoua; James, Jacob; David Mallory; John Pflaum; Mike Sarmento
Subject: RE: Green Acres Tributary - Material for Design Review Meeting

Amie and team,

Thank you for sending the supporting information this morning. It was very helpful to answer the questions that arose from our Technical Roundtable meeting today. I briefly discussed your team's goals and objectives, some of the challenges that the team faces with regard to site constraints, and direction that Barb and I have already provided to you that have shaped the project thus far. In general there was a lot of support for the project and you were commended on being visionaries and tackling the design from an alternative approach. There was also a lot of recognition that there were still a lot of details that would need to be worked out as we proceed.

I focused the majority of the discussion on the drop structures themselves and below is the outcome:

- The rock specs and testing that were provided seem agreeable. I have not looked at this in detail so I trust that you have provided support for material that meets or exceeds our boulder specifications. If not, then our position will be different. Color of rock does not matter to us; the structural integrity is our main concern. This is contingent on visually inspecting the material that is delivered to the site and approving prior to placement.
- We can support the use of Corten steel for the drop structures. A few items to consider:
 - There will likely be some staining on the boulders from the steel oxidation. Does this match the design team's expectations? The boulder/steel connections will be eliminated from the final design.
 - The top edge is a concern from a safety perspective. Will there be sharp edges or will it be slippery when wet and with vegetation/slime growth? A steel cap may address the sharp edge, but maybe not the slippery edge. Although we usually require a concrete cap on top of exposed sheet pile because of previous history with steel caps, but we are willing to work with you in this case. The final details of the walls are in progress and will be included in the future submittal
- There was a great deal of discussion about the steel walls forming the tiers and that the current proposal is to form the walls with feature boulder breaks in the walls.
 - There are concerns with shifting/settling that the seal between the boulders and walls would be compromised and allow for piping of subgrade material to occur. The walls will be revised to be continuous in the future GAT plan submittal
 - Introducing a weakness with joints between the boulders and steel could result in difficult field construction and strong likelihood for a failure at these points. The walls will be revised to be continuous to eliminate the boulder/steel connections in the future GAT plan submittal
 - We felt that the aesthetic intent could be accomplished by a number of means that would be less risky and possibly more implementable in the field. For example:
 - Continuous walls with selectively placed feature boulders adjacent to the wall, possibly with overhangs to provide the desired visual break without an actual physical break in the wall.
 - Utilizing an artistic concrete contractor, like Colorado Hardscapes, that could mimic stone in any shape in the field.

In the end, UDFCD can buy off on the use of the selected rock material as noted above. We also support the use of the Corten steel material on the condition that steel is continuous without the feature boulder gaps as currently proposed. We will also continue to work with the design team to develop the outstanding details to ensure the long-term success of the project.

Thank you again for all of your hard work to date. I appreciate your efforts and am looking forward to continuing to work with you as the design progresses.

Thanks,
Teresa

Teresa L. Patterson, P.E., CFM

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From: adrucker@manhard.com [mailto:adrucker@manhard.com]
Sent: Wednesday, March 16, 2016 7:56 AM
To: Teresa Patterson
Cc: Jenna Bockey; Russ Burrows; Rick Moore; Mark Wilson
Subject: Green Acres Tributary - Material for Design Review Meeting

I'm using Mimecast to share large files with you. Please see the attached instructions.

Teresa,

Per our conference call last week, attached please find the design information for the Green Acres Tributary provided for review and discussion at today's Design Review Meeting.

Thank you for your assistance in moving this project forward.

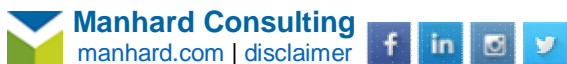
Please call if you have any questions or require additional information.

Amie

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