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October 24, 2012

Mr. Wes Weaver, President
Weaver Construction Management, Inc.
3679 South Huron Street, Suite 404
Englewood, CO 80110

*Via Email to: wes@weavercm.com
No Hard Copy to Follow*

Re: Harold D. Thompson Regional Water Reclamation Facility (HDTRWRF)
Lower Fountain Metropolitan Sewage Disposal District (LFMSDD)

Dear Wes:

Reference is made to your shop submittal identified as follows:

Submittal No.:	11160-001A
Date of Submittal:	October 16, 2012
Title:	Aeration Basin Mixers and Hoist
Specification Section:	11160
Manufacturers:	Grundfos; International Protective Coatings; Halliday Products, Inc.

The referenced submittal has been stamped "**No Exception Taken**", "**Make Corrections Noted**" and "**Revise and Resubmit**". Our comments are as follows:

1. We acknowledge the five items included in the WCMI Additional Submittal Review Comments letter and have the following comments.
 - a. Comment No. 1.c. regarding the installation of removable safety chain and/or handrail at mixer locations: We agree with this approach as discussed in our previous review letter comments.
 - b. Comment No. 2. regarding the installation of mixers in basins that will not be in service for an extended period of time: We request the supplier provide verification that long-term exterior exposure, i.e., non-submerged installation, will not be detrimental to the mixers. Particularly, verify that no grease, oil, lubricants or other fluids could freeze or otherwise be adversely affected by exposure to low temperature winter conditions. Similarly, please verify exposure to high temperature and low humidity summer conditions will not adversely affect the mixers. With this information, we will consult with the Owner and operators so they may implement the proper plan for installation, maintenance and exercising of the mixers that are not immediately placed into service.
 - c. Comment No. 8.c. regarding the provision of 12 mixer hoists: **No Exception Taken**

2. Mixer model AMG 150.29.408.6.1P submitted: **No Exception Taken**
3. The submitted exterior drawing of the mixer control panel does not illustrate the equipment identification plates requested in previous review comments. We do acknowledge the supplier's response that these plates will be provided. However, this control panel drawing and the Bill of Materials do not include any information on these plates. Please be sure these equipment identification plates are provided as requested.
4. The submitted Bill of Materials indicates a control panel enclosure rating of NEMA 4/12, while the supplier's response comments indicate the panel rating to be a NEMA 4X. Please verify the intended NEMA rating for the local control panels and revise the Bill of Materials accordingly. Note that a minimum NEMA 3R rating is required for these panels at their outdoor location as stated in the previous submittal review comments.
5. Please verify the NEMA rating of the surface-mounted indicating lights and HOA switch on the mixer control panels and revise the Bill of Materials accordingly.
6. The following items pertain to the submitted Wiring Diagram for the Soft Start Controls.
 - a. The following six references are made in this wiring diagram. However, from the submitted documents it is unclear where or what these references pertain to. Please clarify the following references.
 - 1) "To 1.7" at the bottom left of the ladder diagram
 - 2) "To 1.10" at the bottom right of the ladder diagram
 - 3) "To 1.27" from soft start contact CL2
 - 4) "To 1.26" from soft start contact CL1
 - 5) "See 1.15" at soft start contacts R1A through R1C
 - 6) "See 1.16" at soft start contacts R2A through R2C
 - b. The mixer local control panels will be installed remotely from the mixers in the basins. Therefore, a local disconnect switch will be required at the mixer locations, between the local control panel and the mixer motor. Please revise the diagram to show a local disconnect switch provided by WCMI just upstream of the motor.
 - c. We take no exception to the Remote Start contact provided in the control panel. However, run status and fault condition contacts are also required for the control panel in accordance with the original mixer memorandum issued July 23, 2012. Please revise the Wiring Diagram to include those contacts for remote monitoring to the facility's SCADA system.
7. From the quantities and tag locations listed in the submitted Stainless Steel Mixer Mast Assembly drawings and the supplier's responses, there appears to be confusion as to the particular requirements of mixers at certain locations. We request WCMI review with its supplier the equipment plan drawing, Sheet AB-11, included in our September 5, 2012 email response to the supplier's inquiry form. This drawing indicates all mixer tag numbers and locations.

We request the submittal drawings for the mixer mast assemblies and the extension brackets be revised to correctly identify the exact quantity required and the associated mixer tag numbers.

There should be three groupings of mixers with similar mast lengths, and two groups of mixers with similar mast offset requirements.

Mast length groupings: From the emailed Sheet AB-11, Mixers ABM-1, ABM-2, ABM-5, ABM-6, ABM-9 and ABM-10 should have similar applicable basin floor elevations and therefore, similar mast lengths. Mixers ABM-4, ABM-8 and ABM-12 should have similar applicable basin floor elevations and therefore, similar mast lengths. Mixers ABM-3, ABM-7 and ABM-11 should have similar applicable basin floor elevations and therefore, similar mast lengths.

Mast offset groupings: All mixers except for mixers ABM-10 and ABM-12 will require extension brackets to offset the mixer mast from the basin wall where a walkway is installed. Mixers ABM-10 and ABM-12 do not require extension brackets as these mixers are located along the north wall of Aeration Basin No. 3 where a fabricated walkway is not installed. See subsequent Comment No. 8 below for additional information on offset distances.

8. The extension brackets included in the submittal drawings have been increased from the previous submittal by 8 inches in length. This positions the mast centerline 44 inches from the inside face of basin wall. Detail 1/AB-13 included in the original mixer memorandum dated July 23, 2012 indicated a maximum distance from mast centerline to inside face of basin wall of 36 inches in an effort to position the mast and hoist as close to the walkway as possible, while still maintaining clear separation between the mast and the in-basin piping. Please provide the rationale for increasing the length of extension brackets, and unless other conditions or interferences exist, revise the submittal drawings to position the mast centerline in accordance with Detail 1/AB-13.
9. Regarding the previous review comment requesting the vertical location of the mast brackets, the supplier responded that the top of the upper bracket should match the top of wall elevation. However, the submitted mast assembly drawings do not indicate that arrangement. In addition, locating the top of the upper bracket at the top of wall elevation does not appear to provide adequate edge distance for the bracket anchors. We request WCMI coordinate with the supplier to provide the vertical locations, whether that be by elevation or dimension, for each mast bracket to ensure there are no conflicts with installation, construction methods and in-basin piping.
10. Revise the Upper Mixer Bracket Extension drawing and Intermediate Mixer Bracket Extension drawing to indicate the correct quantity required and associated mixer tag numbers. In addition, revise the drawings to adequately address other comments of this review letter.
11. For the mixer mast assembly drawings associated with the mixers that do not require a bracket extension, please verify the mast brackets proposed are the same in construction and dimension as those proposed for mixer mast assemblies which do require extension brackets.
12. Previous review letter Comment No. 9 requested input from the mixer supplier as to the recommended vertical location of the mixers within the aeration basins based on the elevation of the fine bubble diffused aeration system. The supplier's response was to defer recommendations to the aeration system supplier. WCMI shall be responsible for coordinating between its suppliers to obtain a recommended mixer elevation that is as low as possible and satisfactory to all equipment manufacturers. Please provide that information in the resubmittal package.

Mr. Wes Weaver
October 24, 2012
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Please call if you should have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Mark A. Morton', with a long horizontal flourish extending to the right.

Mark A. Morton, P.E.

MAM/kmw

cc (letter only):

Mr. Jim Heckman, Manager, LFMSDD, lfmanager@lfmsdd.org

Ms. Cindy Murray, Office Manager, Fountain Sanitation District, fsdistrict@fsd901.org

Mr. Jeff Burst, Project Supt., Weaver Construction Management, Inc., jeff@weavercm.com

Mr. John Jacob, Project Mgr., Weaver Construction Management, Inc., john@weavercm.com

Mr. Adam Roeder, Weaver Construction Management, Inc., aroeder@weavercm.com

Ms. Leslie Brown, Weaver Construction Management, Inc., leslie@weavercm.com

cc (letter only): Mr. Jerry Miller, Resident Project Representative, GMS, Inc.