



DREAM DESIGN INTERNATIONAL, INC.  
CIVIL, STRUCTURAL, AND LAND DEVELOPMENT ENGINEERS

March 28, 2008

Ms. Vicki Fisher  
 City Of Rapid City  
 Growth Management Department  
 300 Sixth Street  
 Rapid City, SD 57701

RECEIVED

MAR 29 2008

**RE: Hyland Crossing Sanitary Sewer Lift Station  
 Response to City Comments on Design Report  
 DDI Project No. 04-0008**

Rapid City  
 March 28, 2008

Dear Ms. Fisher:

This letter is provided in response to the City's review comments in David Johnson's memorandum to Vicki Fisher dated March 26, 2008. The comments are shown below – in italics – followed by my response. Please be advised that our intent with the accompanying preliminary plan submittal is to get agreement/consent on the site configuration and general concepts proposed for the referenced lift station. There's little point in getting too far down the road if we're on the wrong road.

1. *Comment: The report proposes that the facility be initially constructed with a firm capacity of 314 gallons/minute (gpm) to serve 455 Equivalent Dwelling Units (EDU), with capability for future upgrade to a firm capacity of 819 gpm to serve 1,315 EDU. The proposed Hyland Crossing subdivision is anticipated to have 295 EDU. Prior to construction an agreement on allocation of the lift station capacity should be established that would identify if capacity is reserved for future phases of development (the initial Hyland Crossing development is about 40 lots, it should be defined if no other development will be allowed until Hyland Crossing buildout, how regulation of development of adjacent areas that would discharge to the lift station will be managed or limited, etc). Clarify that the city intends to limit or restrict development in this basin in accordance with the available sewage pumping capability.*

Response: We acknowledge a legal agreement will be necessary prior to project approval.

2. *Comment: Provide cost estimate for future upgrades to attain ultimate capacity (819 gpm).*

Response: The estimate requested can and will be provided at a later date. We first need to nail down just what improvements will be provided initially. As I suggested in the Design Report (previously submitted), the anticipated timeframe for development within the lift station service area will influence to some degree the improvements – wiring, starters and controllers – selected initially. Please keep in mind that our estimate will be in "today's dollars", which, in case you haven't noticed, are losing value at an alarming rate.

3. *Comment: Provide an estimate of annual O&M costs, including power costs.*

Response: It would seem reasonable that the City would/should be able to provide perhaps the best estimate of the annual operating costs, especially considering that the City is in the business of operating sewage lift stations. Nevertheless, please provide the annual operating costs for the City's other (similarly sized) lift station facilities and we will distill the information and provide to you our reasoned estimate.

4. *Comment: It would appear appropriate for the facility to be provided with an on-site emergency power source given the facility location, system and service area characteristics, and other city infrastructure*

*requirements. Current limitations on available portable equipment, and the number of other sewage pumping facilities within the city that could also be simultaneously impacted in an emergency situation, would indicate that reliance on transporting and connecting emergency power equipment to the site may not be feasible.*

*Please include in the report recommendations for maintaining service during emergency operations, with consideration for factors such as equipment available or needed, location of this and other area facilities, temporary or overflow storage available (under both initial and ultimate design conditions), pump size, etc.*

Response: Let's cut to the chase; is the City requiring an emergency generator onsite or, perhaps a larger emergency storage capacity? Again, the City is in the business of operating lift stations. City staff would/should best know their level of emergency preparedness and their ability to respond. It would be pointless for me to speculate on such a critical aspect of the design. Our design can include, within reason, whatever improvements or equipment the City deems appropriate or necessary. Who pays for the "additional" or "optional" improvements is another issue.

5. *Comment: It is proposed that emergency storage would be provided to approximately elevation 3710, which would result in some storage occurring in the sanitary sewer upstream of the lift station. It is recommended in the report that future plats would include a note restricting floor level of structures to be no lower than elevation 3711. It is noted that the conceptual plan for development of the area north of the lift station site shows future lots in locations with existing grades lower than elevation 3710. If overflow storage will be incurring in the sewer as proposed, we would recommend that no final plat be approved for any lot unless a developable building area is provided on each lot at elevation 3719 or higher, in conjunction with the proposed plat note.*

Response: In the Design Report I proposed the following note be provided on the Hyland Crossing plats: "No basement floor elevation shall be constructed lower than elevation 3711 ft." This is the same approach – using identical wording – proposed, approved, and successfully in use for the Red Rock Meadows lift station and subdivision plats. It's not clear why it would not work equally as well here. Please keep in mind that existing grades don't necessarily equal proposed grades.

6. *Comment: No discussion is included for the lift station control system; the system provided should be Allen Bradley Model SLC 5/04 PLC with rack, power supply, I/O modules, cables and appurtenances, operator interface, and all necessary software.*

Response: The electrical portion of the project has not yet been designed...we're not as far down the road as we'd like. Be assured the final design will include the control equipment preferred by the City.

7. *Comment: The wet well does not appear to have adequate drawdown (between lead pump on and all pumps off) for the initial conditions scenario. Per DENR design standards a minimum drawdown of about 1.4 feet should be provided rather than 0.8 feet as shown. Also, assure adequate water cover over the pump is achieved to comply with the pump manufacturer's standards.*

Response: The wet well has been designed to accommodate the ultimate build-out condition. Regardless, it appears you've misinterpreted the "draw down" requirement. The intent of the minimum drawdown is to provide – quoting from the regulations – a "usable pit volume in gallons that equals or exceeds two times the maximum capacity in gallons per minute to be pumped." The proposed wet well design satisfies that requirement.

A water depth of 30-inches (2.5 ft.) will be maintained below the all pumps off switch elevation. This water depth was designed consistent with the pump supplier's recommendation and the pump manufacturer's data sheet (see Page 18 of the Appendix in the Design Report.)

8. *Comment: As has been discussed in prior comments, prior to being placed in operation, it will be necessary for all necessary improvements downstream of the forcemain discharge to be in place.*

Response: Since it doesn't appear obvious that we would not propose or allow such an unthinkable situation, please accept my personal assurance that all necessary downstream improvements proposed will be in place and fully functional before the lift station is placed in service.

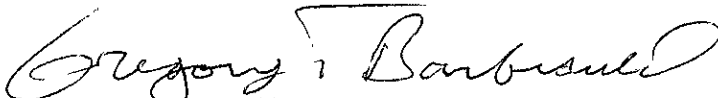
9. *Comment: Provide facilities to allow launching a cleaning pig into the force main from the lift station site. Recovery would be at the proposed manhole at the forcemain termination.*

Response: As mentioned in the Design Report, we are amenable to providing such a system. We will coordinate with staff to determine which system will be most satisfactory.

I look forward to working with staff toward the successful completion of this project. If you have any questions concerning this information or the project in general, please do not hesitate to contact me at telephone number 348-0538 or email [gregb@dreamdesigninc.com](mailto:gregb@dreamdesigninc.com).

Sincerely,

DREAM DESIGN INTERNATIONAL, INC.



Gregory T. Barbeauld, P.E.