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**From:** Wiebe, Laura  
**Sent:** Tuesday, June 25, 2013 4:05 PM  
**To:** Luke Moger  
**Cc:** Ostritchenko, Dmitri  
**Subject:** Zone C crest width

Hi Luke,

Dmitri mentioned that you wanted us to comment on width issues for equipment traffic along the embankment crests.

Based on the survey of the Zone C crest you sent to us on June 17, the distances from the downstream limits of Zone S to the Zone C crest are as follows:

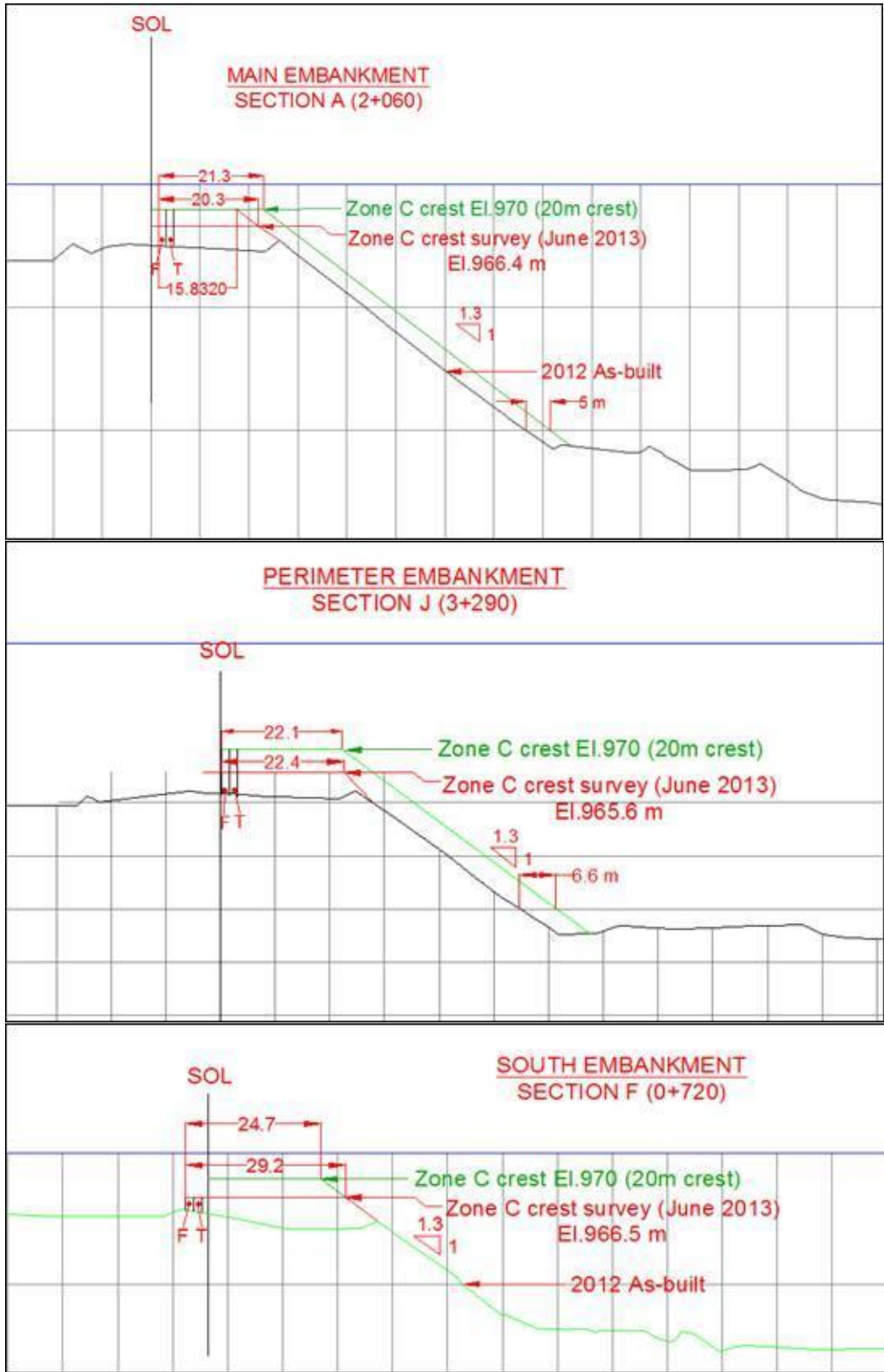
- Main Embankment: 20.3 m (2+060)
- Perimeter Embankment:
  - 22.4 m (3+290)
  - 25.6 m (3+990)
- South Embankment: 29.2 m (0+720)

Based on the Stage 9 design, at El. 970m the distances are anticipated to be:

- Main Embankment: 15.8 m (2+060)
- Perimeter Embankment:
  - 22.1 m (3+290)
  - 16.7 m (3+990)
- South Embankment: 24.7 m (0+720)

It seems as though the Main and Perimeter embankments would pose the most issues as far as driving width for equipment traffic. Any additional fill placed downstream of the current embankment (other than the main embankment buttress) would fall beyond the design scope of Stage 9 (El. 970m). However, additional rockfill placed downstream would typically increase dam stability rather than decrease it. So, there should be no issue with placing rockfill downstream to increase the crest width at 970m, as long as the downstream slopes remain consistent at 1.3:1 and foundation preparation specifications remain the same as those described in the Stage 9 construction monitoring manual.

To achieve a minimum crest width of approximately 20m, an additional 5m and 6.6m (horizontally) of Zone C would have to be placed downstream of the Main and Perimeter embankments, respectively. (see rough sketches below) The South embankment "as-is" appears to have no issue maintaining a minimum crest width of 20m at El. 970m.



On a slightly separate note, preparation of the Perimeter and South abutment foundations will include clearing up to approximately 30m and 33m downstream of the SOL on the Perimeter and South embankments, respectively. (as shown on the drawings in the Stage 9 construction monitoring manual)

Please let me know if you have any questions or if there is anything else you need. Hopefully this all makes sense! ☺

Regards,  
Laura

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