

11-0509-006-03
August 13, 2018

Jeremy Ginsberg, Director
Planning & Zoning
Darien Town Hall
2 Renshaw Road
Darien, CT 06820

Re: **Responses to Engineering Review Comments - Corbin Block**

Dear Mr. Ginsberg:

We have reviewed the most recent comments from Redniss & Mead dated August 10, 2018 and have responded to their comments below. Supplemental calculations and pertinent plan sheets have been provided with these responses reflecting the changes made related to the review comments.

The following summarizes our responses in **bold** text:

1. Corbin Block Engineering Drawings

- a. Sections were provided for scenarios in which ledge, hardpan soil, or water are encountered during excavation. These typical sections should be provided as details on the engineering drawings. Additional soil testing is required prior to construction and should be submitted to Planning & Zoning concurrent with the request for a Zoning Permit for review by the consulting engineer. Modifications to the design of the drainage system informed by the soil testing must maximize retained volumes to the extent practical given encountered soil conditions. The under drain should be eliminated from the section provided for high groundwater conditions. As drawn it will compromise the effectiveness of the infiltration system.

Response: The details were added to the engineering drawings on Sheet C8.8. Additionally, the underdrain shown on the high groundwater section has been eliminated from this detail. The revised drawing has been included for your review.

- f. The overland flow path does show that runoff can safely flow overland without negatively impacting the proposed buildings. Revise sheet C4.0 to show the pipe running between MH#2 and MH#4 as a 24" to match the model.

Response: The pipe label has been adjusted to reflect a 24-inch pipe on sheet C4.0. The revised drawing has been included for your review.

- k. Provide a note on Drainage Plan-1 (C4.0) stating that no stormwater runoff generated on the upper surface of the parking garage or from the ramps to underground parking can enter the sanitary system. Care must be taken in the design of the parking structure, its drainage system, and the drains and pumps at the bottom of the garage ramps to prevent stormwater from bypassing storm drains and entering the sanitary system. Enclosed and covered drains inside the garage shall be tributary to the sanitary system after being routed through an oil/grit separator. A separate sewer permit from the Department of Public Works



is required prior to construction and separate sewer inspections by the Department of Public Works for all components of the sewer system is required, including verification that the garage is properly drained and plumbed in accordance with above.

Response: The requested note has been added to Sheet C4.0 and included for your review.

3. Corbin Block Hydrologic and Hydraulic Calculations

- m. Profiles were provided for the 25 and 50-year storm. The twin 18" pipes under Old Kings Highway do not have the capacity to convey the 25-year storm in free flow (no tailwater) conditions. It is also noted that the cross-sectional area of the proposed storm system is reduced in the direction of flow between the proposed 30" pipe and the twin 18" pipes (4.9 sf to 3.5 sf). We recommend enlarging the proposed 18" pipe paralleling the existing one to 24". Per the previously submitted conveyance calculations, the capacity of the pipes is 25.76 cfs. The updated 25-year profile shows a flowrate of 38.94 cfs passing through the two pipes in the 25-year storm event. Upsizing the pipe to 24" will provide adequate capacity and a cross sectional flow area (with the paralleling 18") equal to the 30" pipe directly upstream.

Update MH#7 in the 50-year HGL profile to have a tailwater equal to the 50-year peak water elevation of the south infiltration system (44.53). Take the maximum hydraulic grade line from the updated HGL model at OCS-01 and input it into the Hydraflow Model as the tailwater applied to the Courtyard Infiltration outlet structure. Provide the updated 50-year profile and updated 50-year Hydraflow Model to examine the performance of the Courtyard Infiltration system during a 50-year storm event. Update the drainage, if necessary, to make sure the Courtyard Infiltration system will function without surcharging to grade during the 50-year storm event. Resulting in flow reversals

Response: The 25-year flow rate (38.94 CFS) cited in your comment above is not correct. The 25-year flowrate reported by the modeling software is inclusive of flow reversals from the tailwater condition when the outlet pipes are submerged. The flow rate generated on site for the 25-year storm (without including the additional volume in the pipes from an elevated tailwater condition) is 29.6 CFS. The twin 18-inch pipes were initially proposed on our drawings due to concerns with the crossing of the existing sanitary sewer main in Old Kings Highway South. We have since been provided with additional as-built information on the existing sewer that indicates the main is a syphon at this location; therefore, we are not limited by a potential gravity sewer conflict as we had initially anticipated. In light of this information we have revised the outlet to be a 30-inch RCP to match the upstream pipe diameter. The revised drawings reflecting this change have been included for your review.

We have also revised the HGL profile for the 50-year storm to reflect the starting tailwater elevation of 44.53 as requested. The revised profile has been included for your review. The revised profile indicates that the HGL will just crest at the frame of OCS-1 by 0.01-FT, but this is only very minor ponding that will likely be accommodated within the storage

capacity of the proposed trench drains within the plaza and not crest over the grate of the structure.

- n. A Hydraflow analysis was provided for the Water Quality Basin and the berm elevations were updated to provide 0.4' of freeboard during a 50-year storm. Update the grading of the berms to have a maximum slope of 3:1 and a level top that is at least two feet wide (the grading of the berm does not allow for this as drawn). Update the provided retention calculations.

Response: The grading for the water quality basin was adjusted to accommodate the requested dimensions. The revised basin grading will accommodate the same storage volume that was previously shown on our plans. We have included a copy of the revised water quality basin detail for your review.

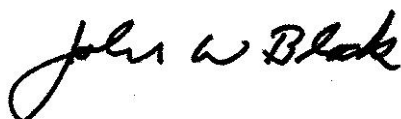
If you have any questions, please feel free to contact us at 203-712-1100.

Very truly yours,

TIGHE & BOND, INC.



Erik W. Lindquist, P.E., LEED AP
Project Manager

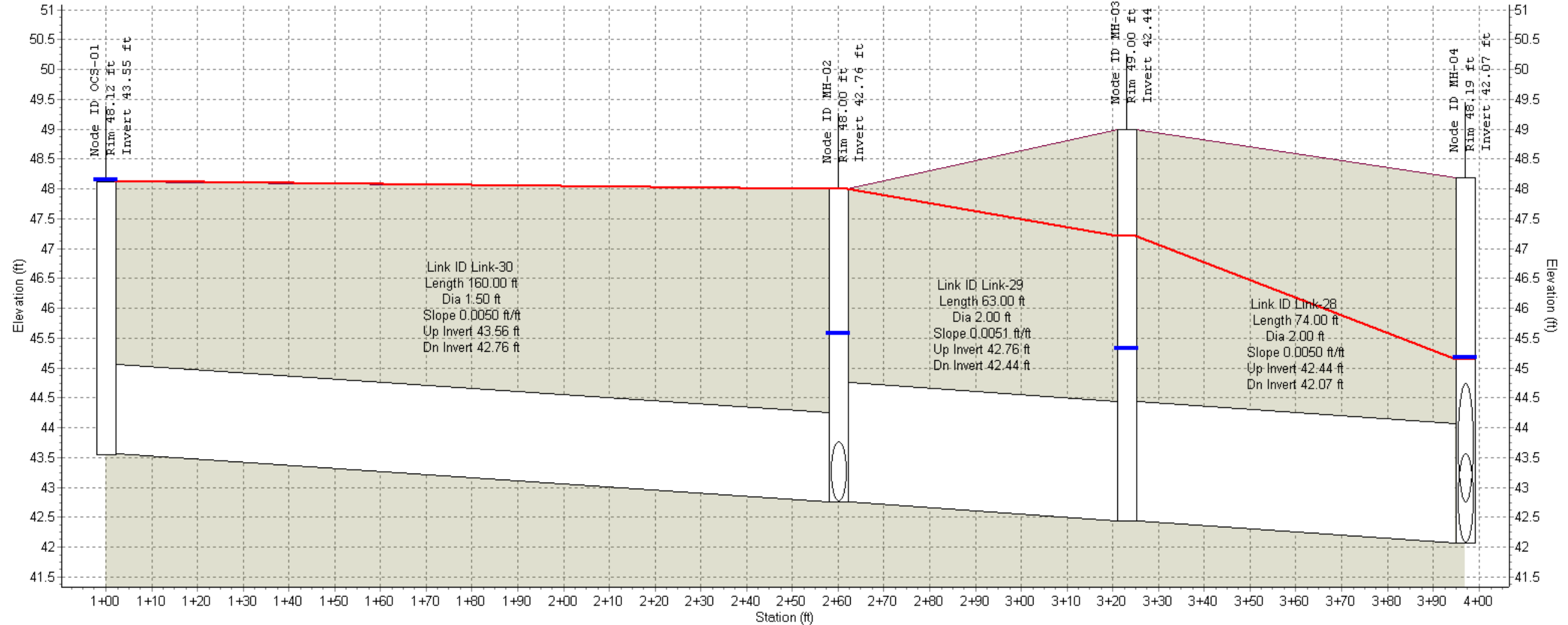


John W. Block, P.E., L.S
Senior Vice President

Enclosures:

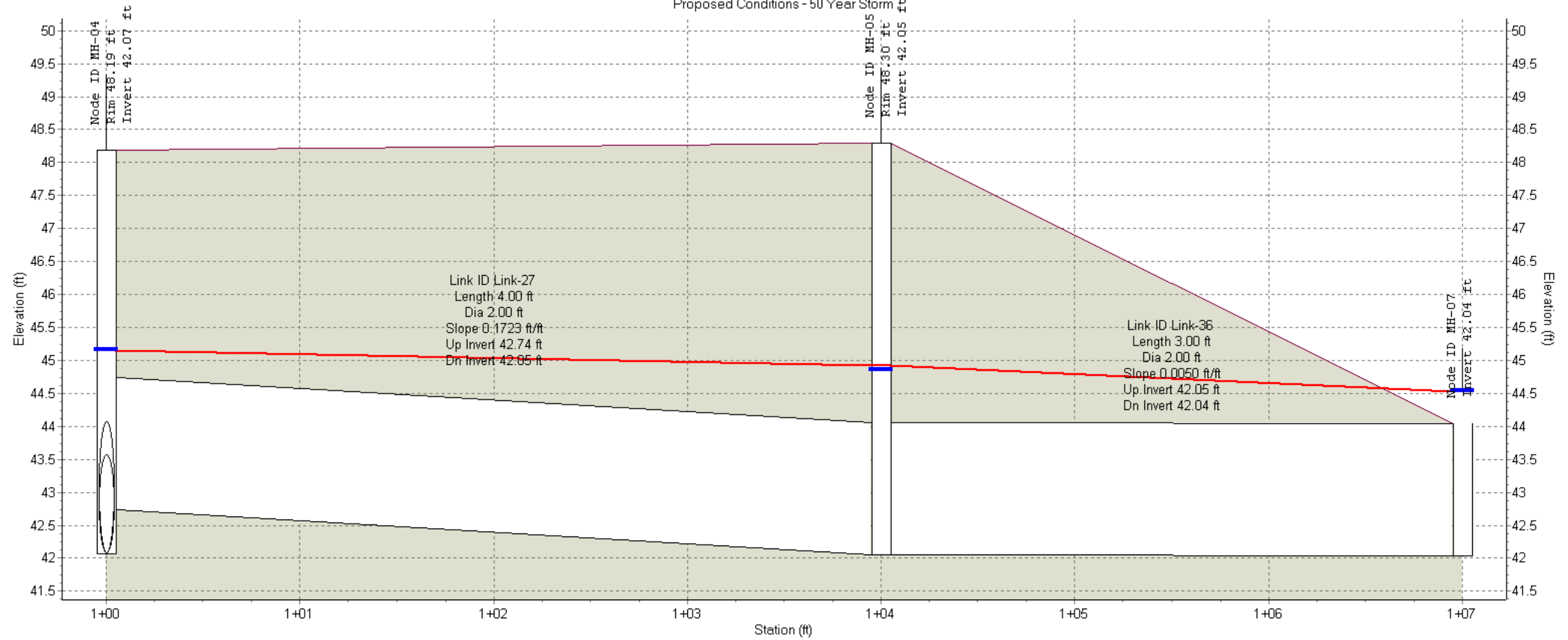
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Corbin Block
Proposed Conditions - 50 Year Storm



| | | | | | | | |
|----------------------|---------|---------|---------|---------|---------|---------|---------|
| Node ID: | OCS-01 | | MH-02 | | MH-03 | | MH-04 |
| Rim (ft): | 48.12 | | 48.00 | | 49.00 | | 48.19 |
| Invert (ft): | 43.55 | | 42.76 | | 42.44 | | 42.07 |
| Min Pipe Cover (ft): | 3.06 | | 3.24 | | 4.56 | | 3.45 |
| Max HGL (ft): | 48.1300 | | 48.0000 | | 47.2200 | | 45.1500 |
| Link ID: | | Link-30 | | Link-29 | | Link-28 | |
| Length (ft): | | 160.00 | | 63.00 | | 74.00 | |
| Dia (ft): | | 1.50 | | 2.00 | | 2.00 | |
| Slope (ft/ft): | | 0.0050 | | 0.0051 | | 0.0050 | |
| Up Invert (ft): | | 43.56 | | 42.76 | | 42.44 | |
| Dn Invert (ft): | | 42.76 | | 42.44 | | 42.07 | |
| Max Q (cfs): | | 10.63 | | 10.46 | | 12.46 | |
| Max Vel (ft/s): | | 6.01 | | 4.72 | | 4.52 | |
| Max Depth (ft): | | 1.50 | | 2.00 | | 2.00 | |

Corbin Block
Proposed Conditions - 50 Year Storm



| | | | |
|----------------------|---------|---------|---------|
| Node ID: | MH-04 | MH-05 | MH-07 |
| Rim (ft): | 48.19 | 48.30 | |
| Invert (ft): | 42.07 | 42.05 | 42.04 |
| Min Pipe Cover (ft): | 3.45 | 4.25 | |
| Max HGL (ft): | 45.1500 | 44.9300 | 44.5300 |
| Link ID: | Link-27 | Link-36 | |
| Length (ft): | 4.00 | 3.00 | |
| Dia (ft): | 2.00 | 2.00 | |
| Slope (ft/ft): | 0.1723 | 0.0050 | |
| Up Invert (ft): | 42.74 | 42.05 | |
| Dn Invert (ft): | 42.05 | 42.04 | |
| Max Q (cfs): | 17.55 | 24.23 | |
| Max Vel (ft/s): | 7.46 | 7.89 | |
| Max Depth (ft): | 2.00 | 2.00 | |