



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

January 5, 2012
Subject: **Arundel**
State PIN: 017867.00
Amendment No. 5

Dear Sir/Ms:

The following questions have been received:

Question: The transverse section of the box culvert (sheet 15) appears to show a small segment of the roof protruding into the slope end sections on each end. Is this the intent? Is so, what is the dimension?

Response: Yes, this is the intent. The dimension would depend upon the thickness of the top of the box, which is designed by the fabricator. The end slope is 1.75:1 so for example if the top of the box is 1 foot thick, then the horizontal dimension would be 1'-9" (minus the chamfer).
The chamfer was not shown on the plans. It should be a 2" chamfer.

Question: On prior MDOT projects we have not been allowed to backfill the box culvert until after the strands are installed and the post tensioning has been completed. On the Hutchins bridge project will the Contractor be allowed to backfill the box culvert prior to installation and tensioning of the strands?

Response: Since this is staged construction, the contractor will be allowed to backfill without post tensioning the first stage. Post tensioning will only be needed in the final stage to avoid long term potential movement between parts; that may cause break up of joints and leakage of backfill material into the culvert, as well as water leakage outside of culvert into the backfill. However, contractor design and details for first stage should insure minimum movement after backfilling and application of traffic loads. Problems have occurred in the past in pulling post tensioning strands in preformed holes due to movement, misalignment, and manufactured tolerances of culverts pre-cast parts.

Question: Do the tapered end of the box culvert need to be tensioned or just the full box pieces? If yes, only the bottom corners could have holes.

Response: The tapered ends of the box culvert have to be post tensioned with the rest of the box pieces. The top corners of the tapered ends wall must have preformed holes that



PRINTED ON RECYCLED PAPER

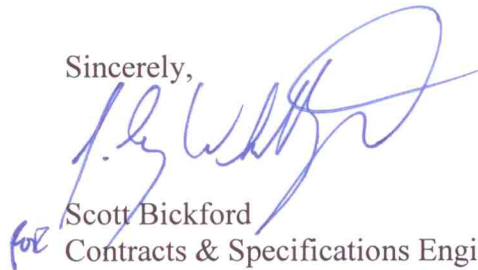
align with the box pieces. A recessed block-out can be formed in the desired location at the top of the tapered walls, or the wall can project out from the tapered end to form a vertical surface for that purpose. A 3 inch diameter hole and a 6 inch square block-out is all that is needed. The contractor must provide design details to accommodate post tensioning in the four corners of the culvert at the tapered ends. The department will review and decide whether to approve the details or suggest modifications.

Question: Does the high performance membrane only go on the top? If no, what needs to be covered?

Response: The membrane must cover the entire top at the joints plus 1 ft down the sides of the culvert. We have been doing this for a while on precast culverts and we have not seen any problems that may suggest otherwise.

Consider these changes and information prior to submitting your bid on January 11, 2012.

Sincerely,

A handwritten signature in blue ink, appearing to read "S. Bickford", is written over the typed name and title.

for Scott Bickford
Contracts & Specifications Engineer