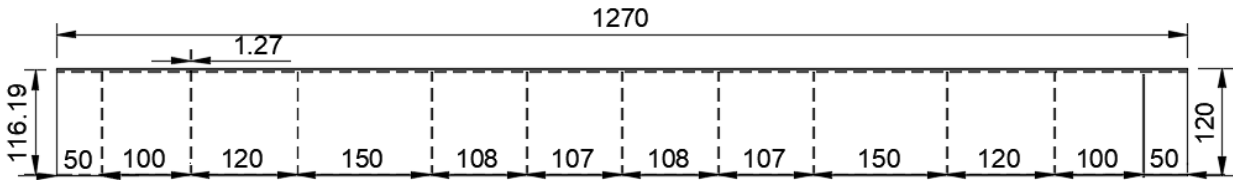


CIV102 Bridge Project Engineering Drawings

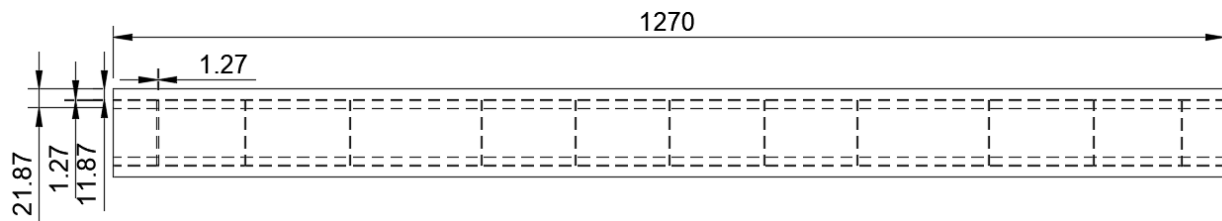
Oscar Sun, Syeda Mahdia, Di Hu
November 26th, 2023

1. Elevation view of bridge

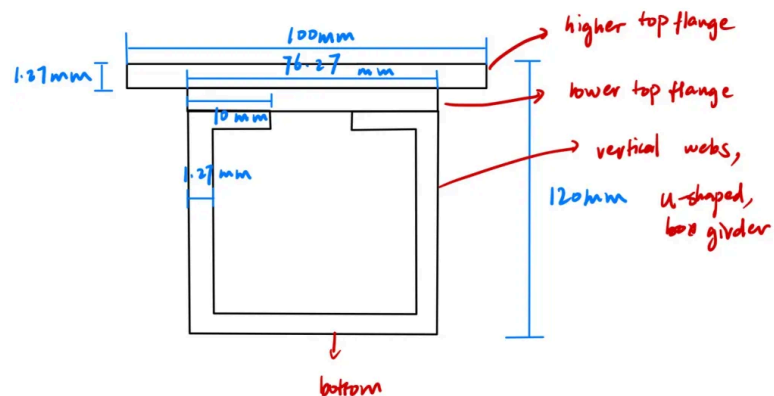
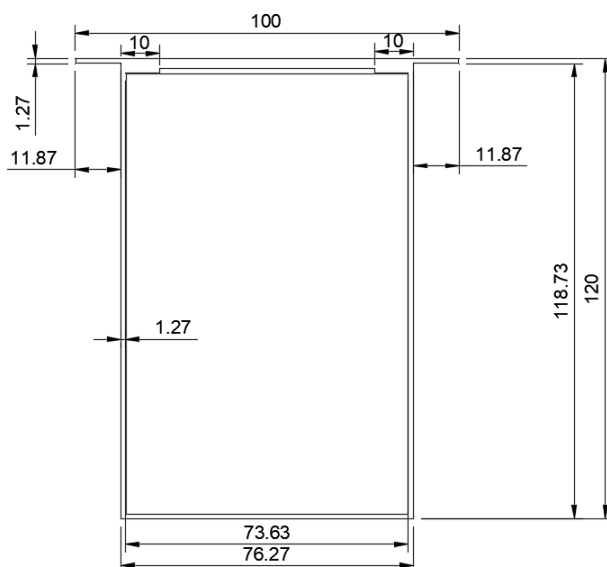


* Note, the total height, including the heights of the top two flanges that make up the top deck of the bridge is 120mm. The height of the web is 116.19mm.

2. Top/ bottom view of bridge

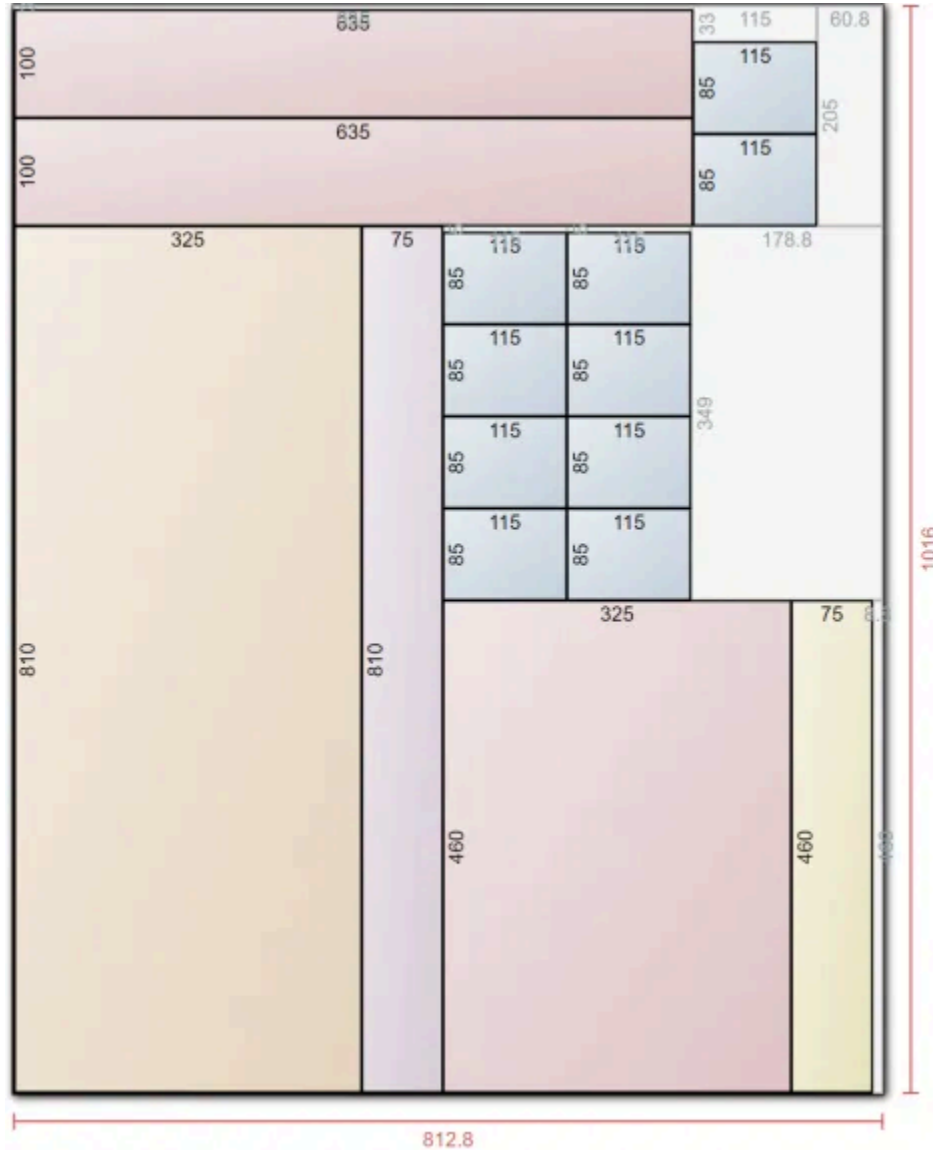


3. Bridge Cross Section View



4. Construction Drawing: Matboard Cutting

The following image of mat board cutting was constructed from tool *Cutlist Optimizer*. All measurements are in millimeters. A margin of error of about 1 cm was considered for construction purposes.

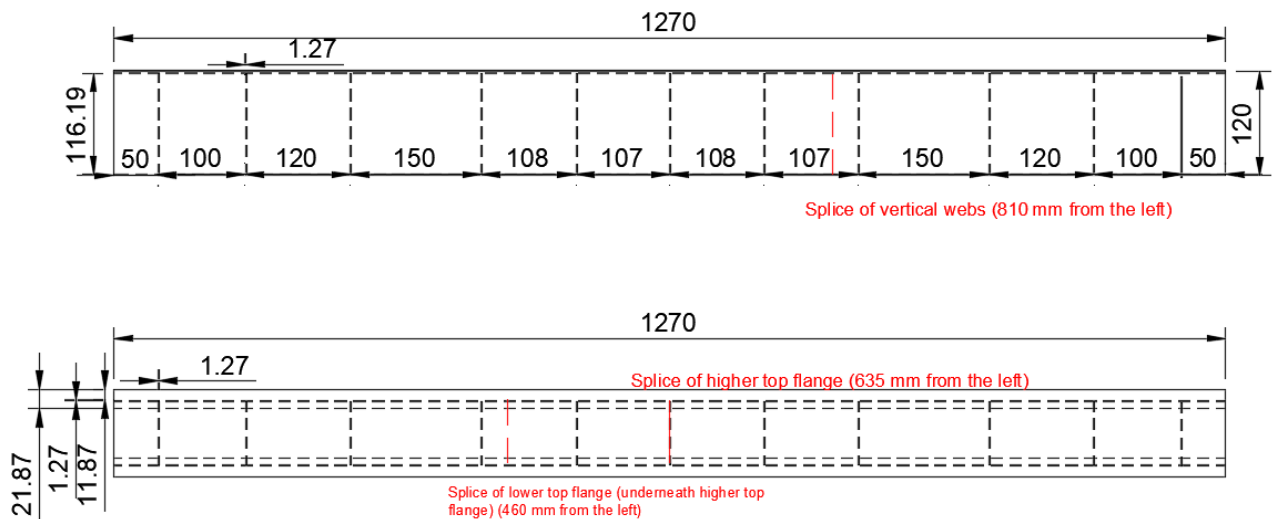


5. Splice and Connection Details

Splices

To avoid exposing the matboard bridge to a single point of weakness, the splices of different parts of the bridge are located at different locations. The diagram below shows their different locations throughout the bridge. The top drawing (elevation view) presents splice locations of

vertical webs, whereas the bottom drawing (plan view) presents splice locations of the top two flanges.



Connection Details

- For the splices in vertical webs, three matboard patches were used on the interior. Three more reinforcement patches were used on the exterior. The following graphs show their respective locations and shape on the bridge.

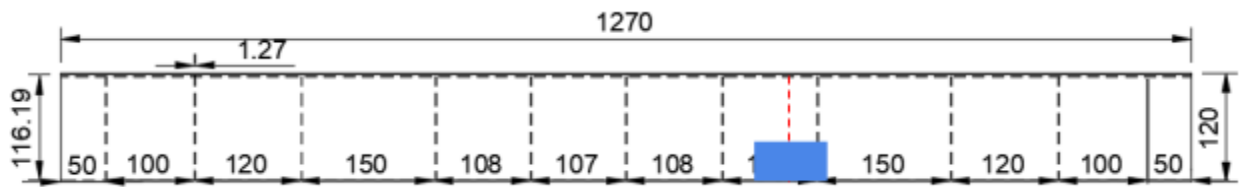


Figure 1: Elevation View (Left): Exterior matboard patches.

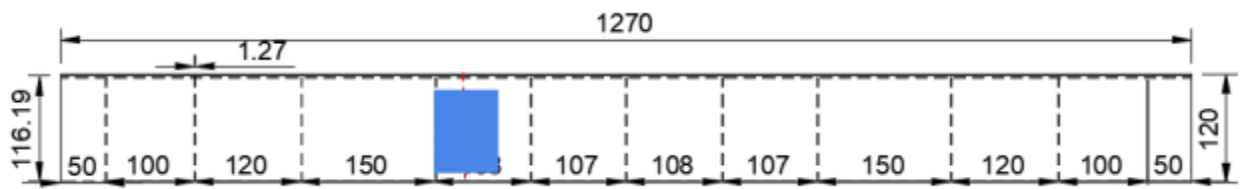


Figure 2: Elevation View (Right): Exterior matboard patches for vertical webs.

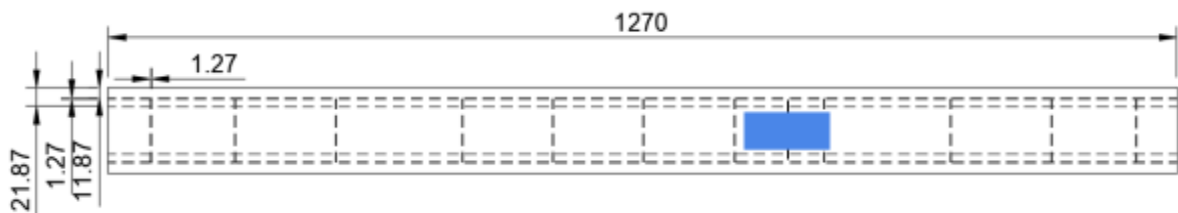


Figure 3: Bottom View: Exterior matboard patches for box girder.

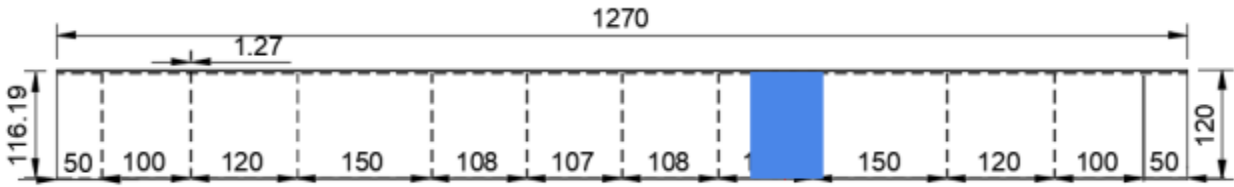


Figure 4: Elevation View (Left) : Interior matboard patches for vertical webs

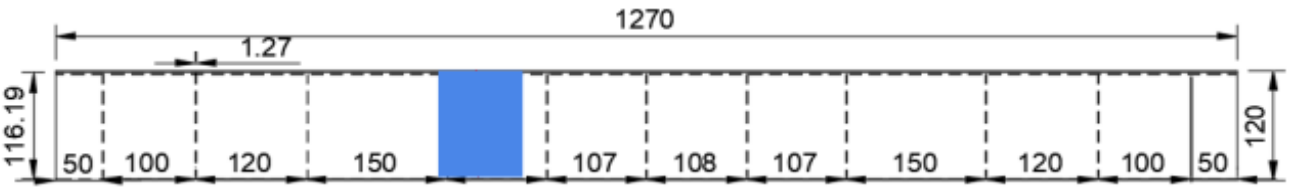


Figure 5: Elevation View (Right): Interior matboard patches for vertical webs.

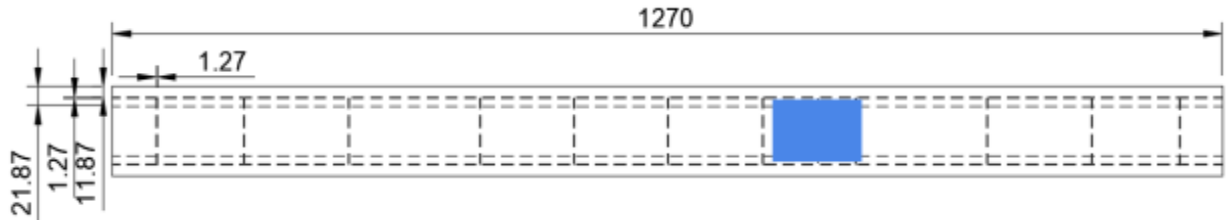


Figure 6: Bottom View: Interior Matboard patches for box girder.

- The splice in the lower top flange is reinforced by one matboard patch in the interior surface before it was glued onto the web glue tabs.

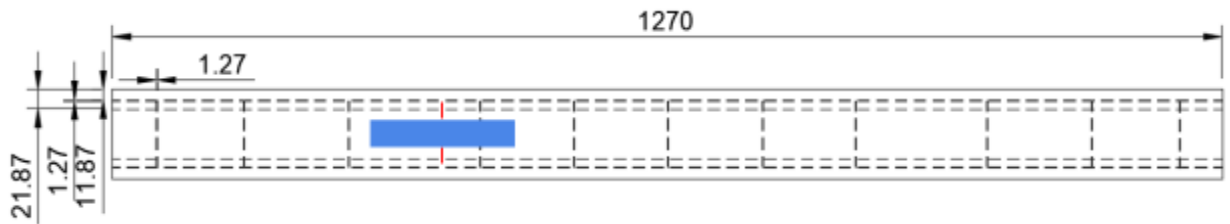


Figure 6: Plan View: Interior matboard patches for lower top flange

- The splice in the higher top flange is not particularly reinforced through matboard patches. Rather, the entire piece is glued onto the lower top flange and therefore no additional reinforcement even if it is technically two pieces.