

January 5, 2018

Carl Posewitz  
Paradigm Architecture  
125 ½ East Main  
Missoula, MT.

Re: Gym Parapet Wall Movement  
Linderman School  
Polson, MT.

Carl:  
At your request, we have investigated the parapet wall movement at the Linderman School at Polson. The south parapet wall has move outward (to the south) causing a noticeable bow in the wall. This movement and bow is considered to be very recent. I was at the school on late Tuesday afternoon. January 2<sup>nd</sup>.



The gym wall is a triple wythe, unreinforced brick masonry (URM) wall to the level of the arched bowstring roof trusses and corresponding arched roof structure. Above the arched roof, the wall shifts to a double wythe wall. For a significant portion of the south wall, the double wythed, upper portion has shifted outward. Please see attached rough sketch A for reference to this condition. The cause is considered to be seasonal, cyclic drifting snow and ice against the wall. Further explanations have been generated by your office in earlier reports. This letter and sketches address a stabilization repair.

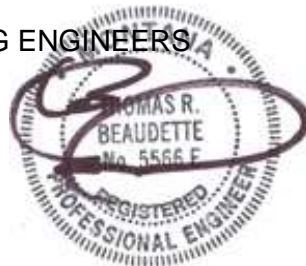
Please reference the attached repair details concerning the following:

- Install tie-back connections to the existing roof structure along the south wall.
  - Start approximately 6' from the southwest corner and install tie-backs at 6' o/c continuing along the aggressively bowed portion for approximately 60' (maybe slightly more to be verified during installation).
  - For the remaining portion of the parapet that has not moved, please install tie-back anchors at 8' o/c. Please stop the tie-backs approximately 10' from the southeast corner.
- For the tie-backs, please install all-tread bolts through the brick wall with face plates against the exterior face of the wall. Please reference attached detail B.
- Remove existing ceiling material to access the through bolt locations. Install anchor blocks against the existing rafter as shown in detail C.
- Extend a 5/8" diameter all-tread through the anchor blocks to connect to the wall through bolt with a turnbuckle.
- Tension the assembly (somewhat aggressive). Ultimately, the wall should be able to be brought back to close to plumb. However, the present winter conditions (i.e. snow and ice against the inside face of the wall) may restrain full movement.

We estimate approximately 16 anchor tie-backs along the south wall. If the walls cannot be straightened at present, please consider allowing for spring or summer access of the turnbuckles to complete the process. Also, please consider the north wall. While no evidence of movement, the north wall to roof interface condition should be identical. The school should plan and schedule tie-back anchors along the north wall at 8' o/c. With the north wall being a stabilization effort only, the anchors can be epoxy bolted to the inside face of the wall only and the through wall bolt and face plate can be eliminated.

We realize this information is rather general in nature, so please call with any questions. I have coordinated this repair information with Dave Jorgensen with Bitterroot Welding. He will be on-site late Monday or Tuesday assess the logistics of this work and schedule his crews immediately thereafter.

Sincerely,  
BEAUDETTE CONSULTING ENGINEERS  
Tom R. Beaudette, PE



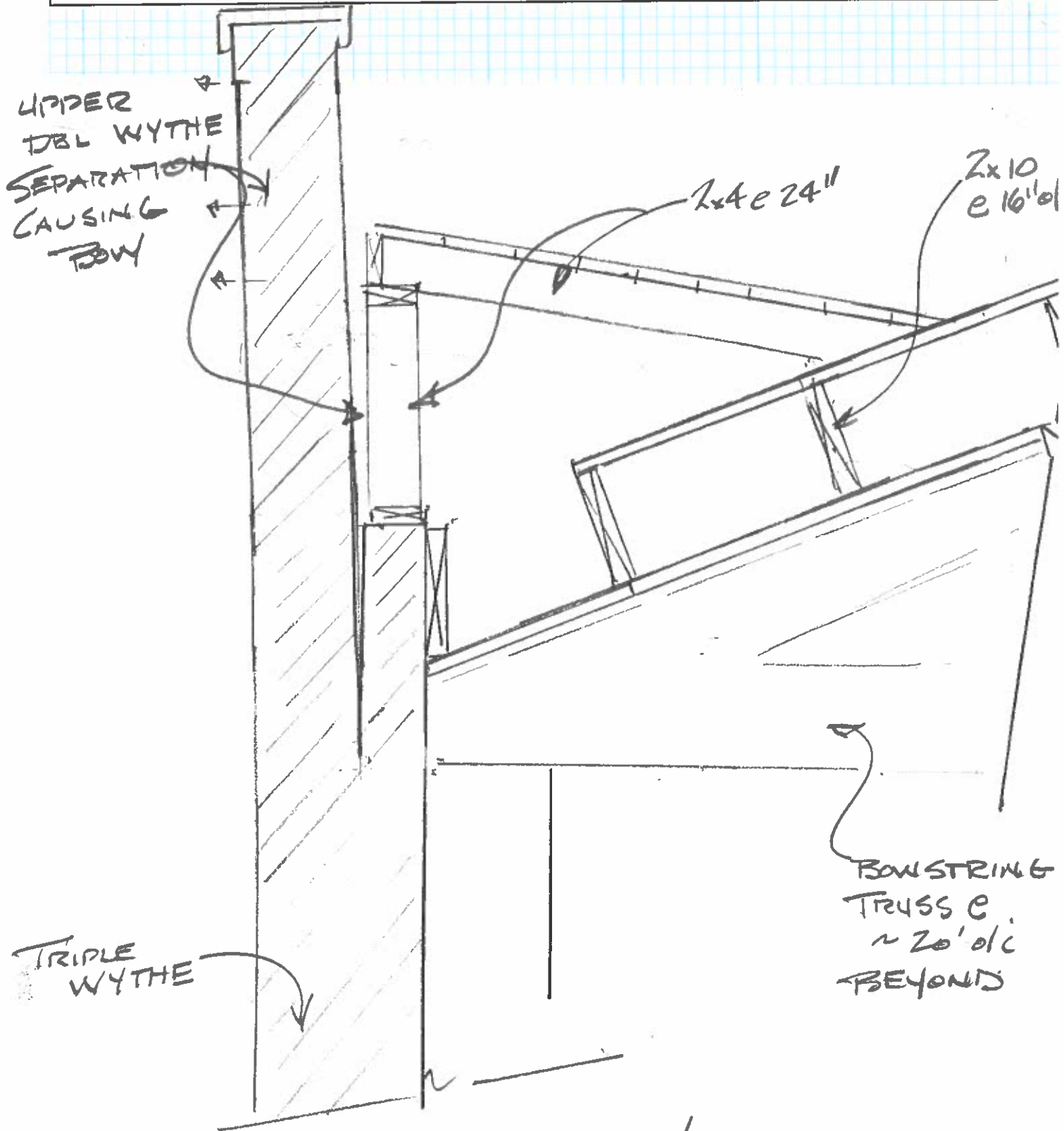
Cc: Dave - Bitterroot

Project **LINDERMAN SCHOOL - POLSON**

Date **1/3/18**

Subject **GYM WALL STABILIZATION**

By **Tom**



(A)

EXISTING SECTION

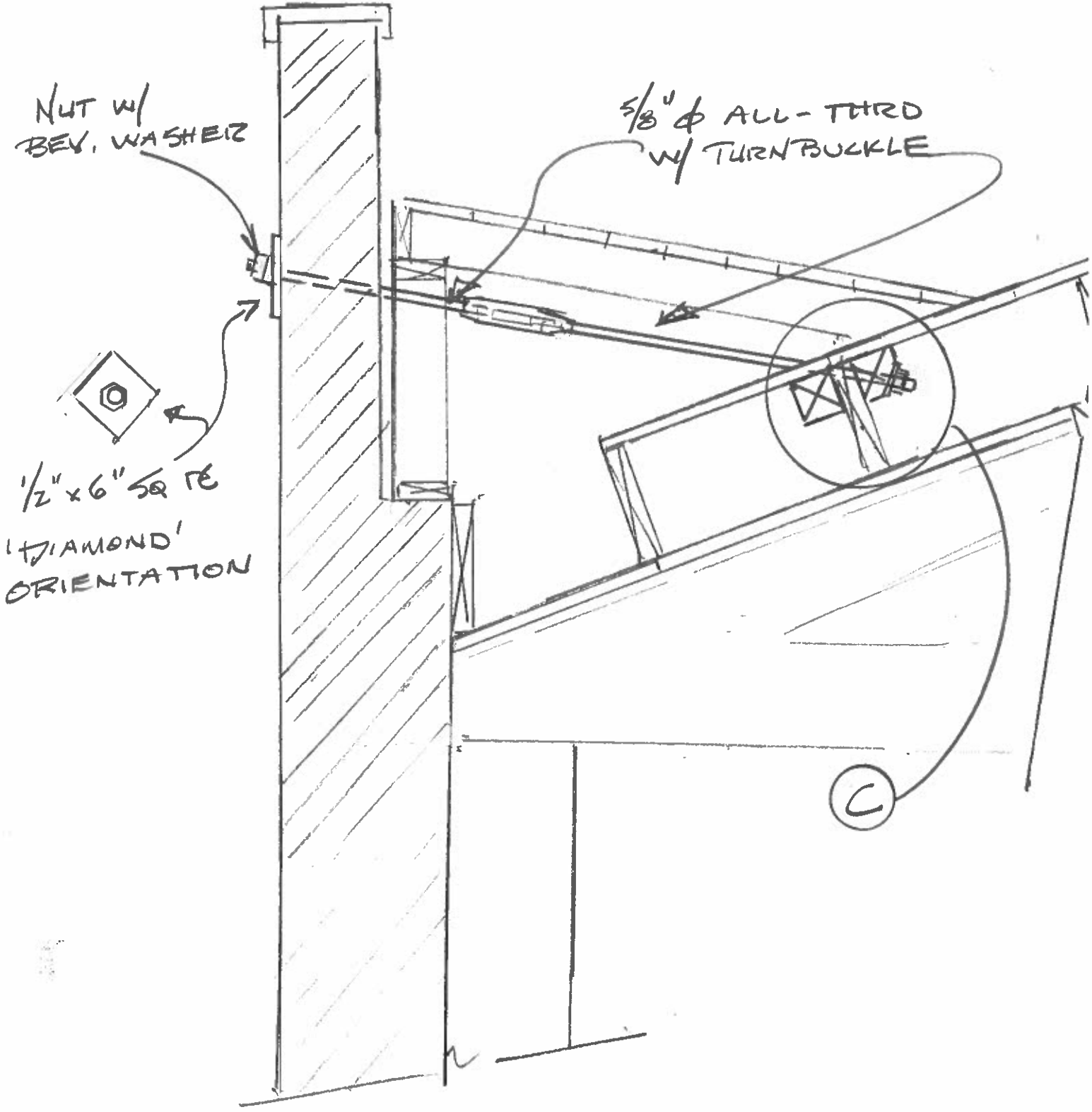
~ 1" = 1'-0"

Project LINDERMAN SCHOOL - POLSON

Date 12/4/18

Subject GYM WALL STABILIZATION

By TA



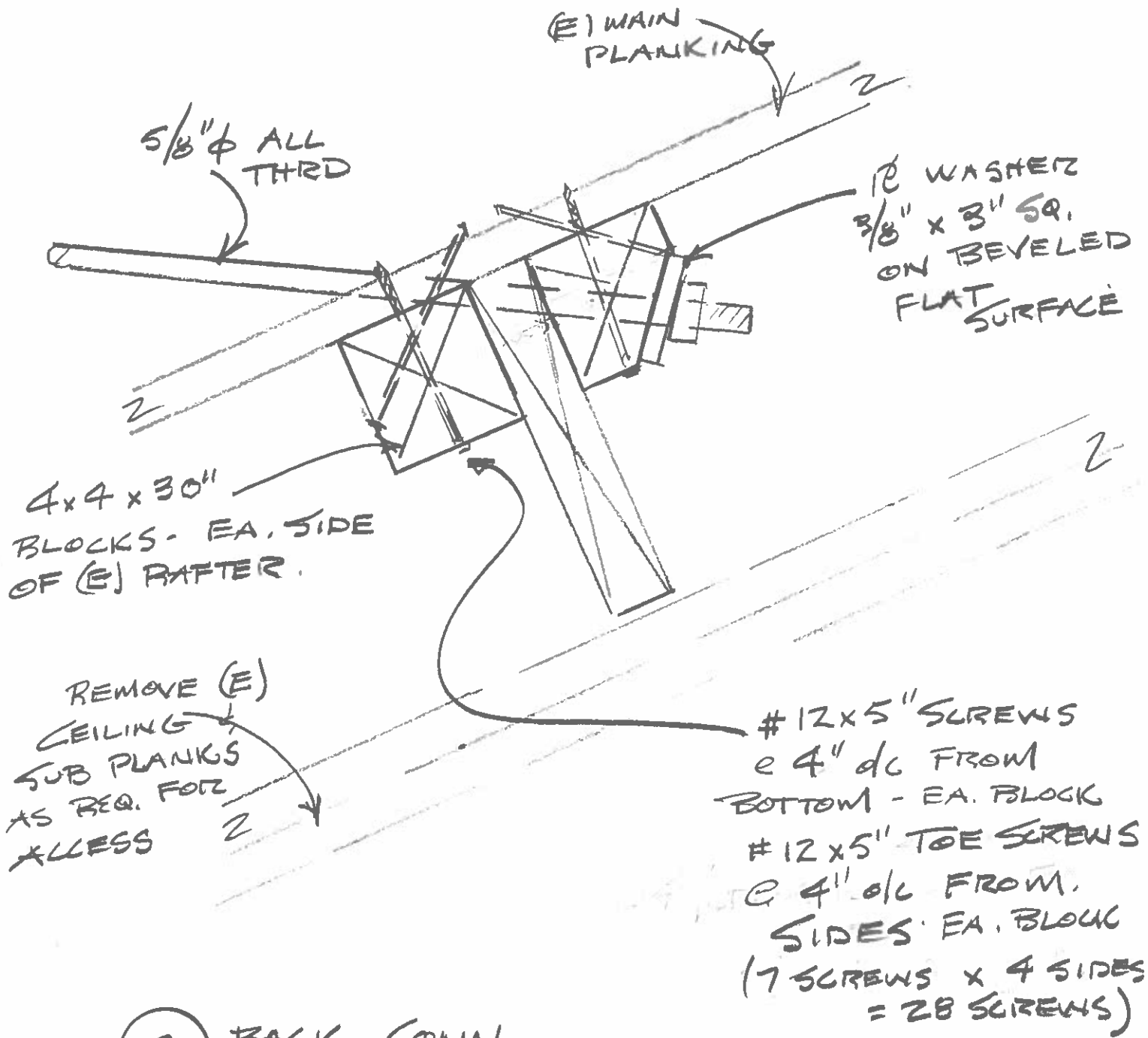
**B** REPAIR DETAIL

Project  
LINDERMAN SCHOOL - POLSON

Date  
12/4/18

Subject  
GYM WALL STABILIZATION

By  
Tom



**C** BACK CONN.