

Pole Building Enclosure Site Plan



B7 ENGINEERING

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26 July 2019
19082

Subject: Grandview School District, Storage Warehouse, Wine Country Road and Bonnieview Road.

Grandview School District purchased the site originally used by Grandview Lumber. The site originally had six structures for storing and displaying building materials and supplies. Four of these structures have been demolished. Of the two remaining structures is the original hardware store and the dimension lumber shelter.

The lumber shelter measures about 46 feet wide and 126 feet long with a 14-foot eave and 4:12 pitch roof. The floor is concrete on grade. The building is generally open. Both ends walls having 4-foot return walls at each corner leaving a 38-foot opening. The north side has two 14-foot return walls at both corners (ends). The south wall is fully sheeted. The building is framed with wood girders spanning 14 feet between 6x6 columns which support plate trusses spaced 24 inches. Trusses are topped with 2x4 purlins spaced about 24", and the roof and walls are covered with rolled metal sheeting fastened to the wood frame with screws.

The school district wants to fully enclose the building and use it for storage of surplus items. Adding wall panel to the north side and ends increase the sail area and increases wind forces on the lateral forces resisting system. Adding wall panels also contributes toward increased resistance to lateral loads. B7 Engineering was called to assess the balance and comment on these modifications.

Mr. Tim Bardell PE, visited the site with you on 25 July 2019 AM. This letter is a report of his findings and recommendations.

Analysis indicates that the increase in wall area is overcome by the increased length of available shear walls to resist lateral forces. Analysis also indicates that wall framing for the new in-fill needs to be anchored at the floor and truss headers, NOT running horizontal from column to column. Horizontal wall framing concentrates bending on the columns that exceed the capacity of the columns.

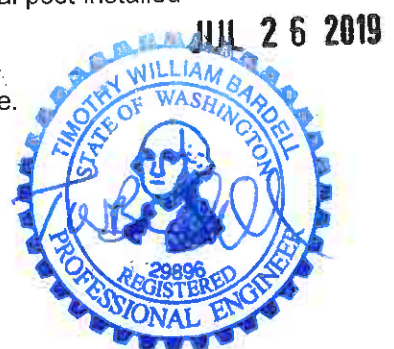
Whether or not the building is used as indicated above, the end walls (gables) need additional shear wall. Analysis indicated wind shear is near 1400 lbf/ft (factored) on the existing walls. By filling in the 38-foot openings at each end the applied shear is reduced to about 250 lbf/ft (factored), which is within the capacity of typically detailed wood and steel shear walls. The roof should also be checked for fastener spacing equating to one #10x1-1/2" or larger screw at each high rib as the panel crosses or contacts purlins, eave struts, and base plates.

Another concern is wall anchorage. It is recommended that the base of the wall include a 4x6 pressure treated fastened and sealed to the concrete floor with either a chemical or mechanical post-installed concrete anchor comparable to 1/2" diameter anchor bolt spaced 48 inches

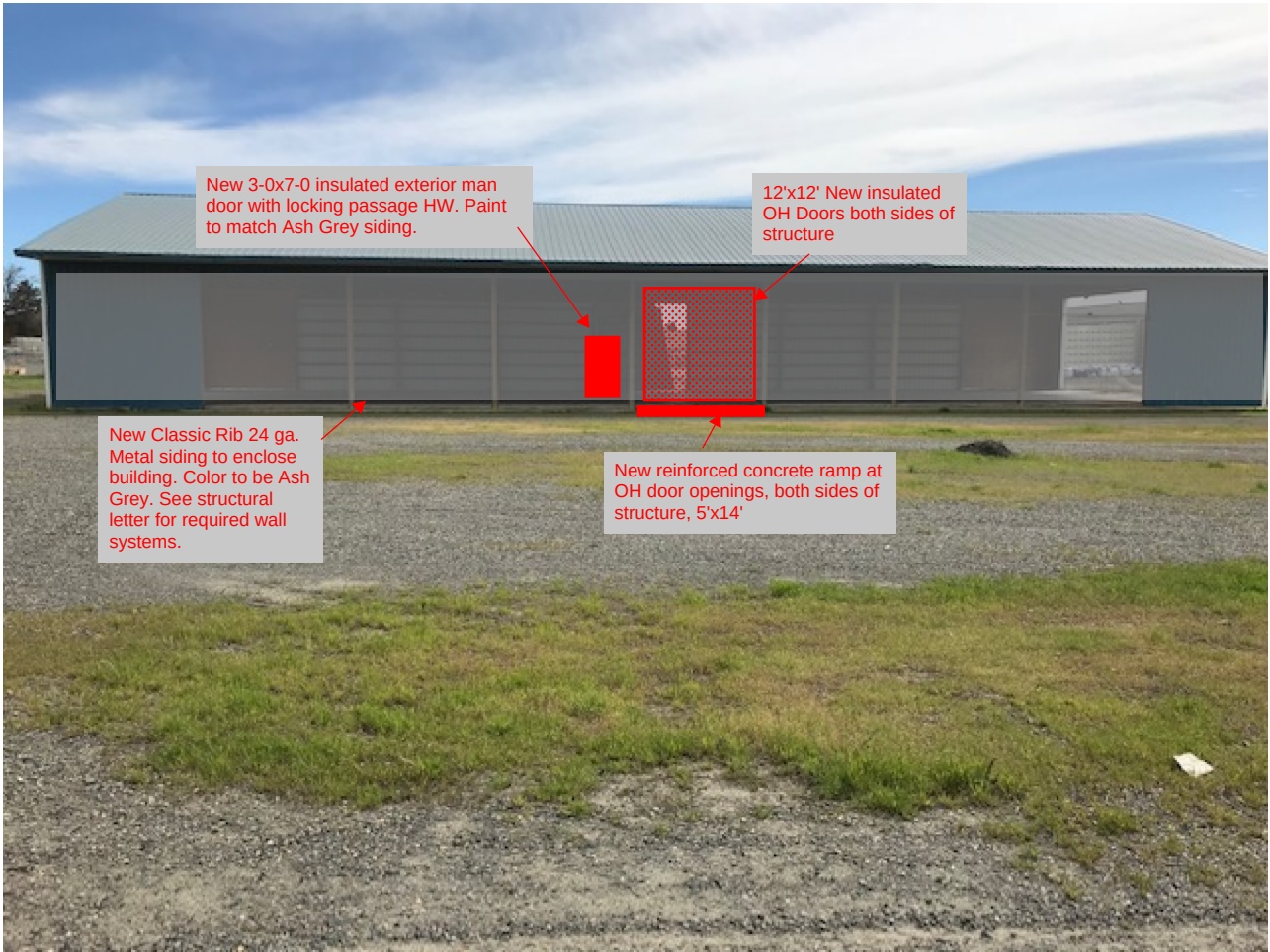
If there are any other concerns or questions regarding this project, please contact me.

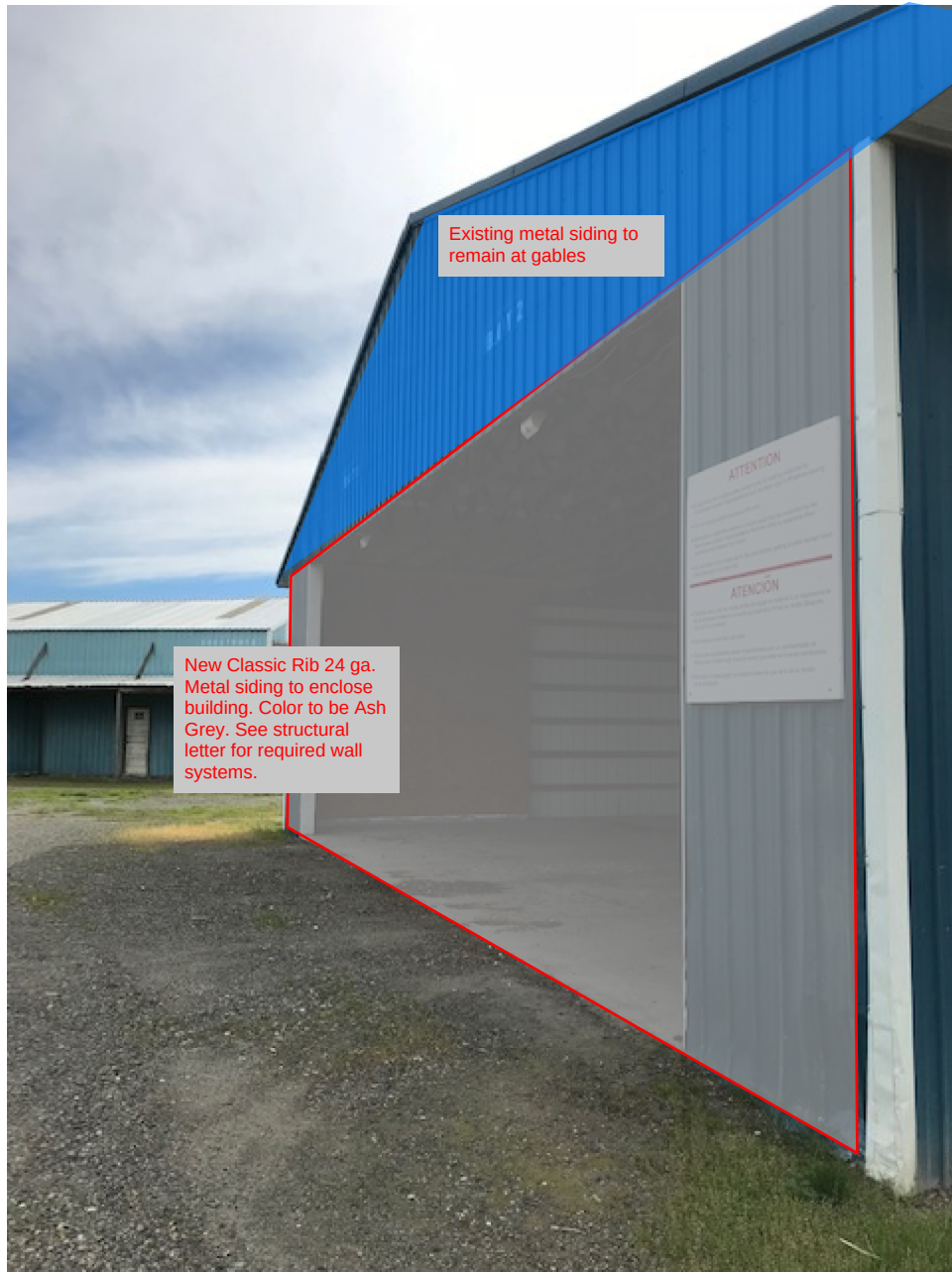
Sincerely,


Timothy W. Bardell PE



Pole Building Enclosure





Existing metal siding to remain at gables

New Classic Rib 24 ga. Metal siding to enclose building. Color to be Ash Grey. See structural letter for required wall systems.



All interior OSB to remain.
Walls exposed during
exterior panel install, to
receive R21 faced
insulation. Field
measure.