Building Investigation, Design and Consulting
Po Box 92977, Albuquerque, NM 87199
www.agiconsultants.com mail@agiconsultants.com
505.235.7596 Fax 505.899.4436

Date: 5/16/2022

Project: DACC Media Center Roof Inspection, NMSU Las Cruces

Overall Conditions, Recommendations
TPO Roof Section:

1. The roof membrane is in the beginning state of premature failure. The TPO membrane and pitch pans has had some repair work trying to keep the roof from leaking. Some of these repairs are starting to fail.
2. The TPO industry has suffered a lot of failures of the last 16 years due to non-strict ASTM's, changes in formulations and floating scrims to save money in production. The typical signs of these failures are called crazing and it shows up as small and large cracks at the welded seams, around walk pads, in the middle of the field sheet, around drains, ponding areas and in some conditions on wall flashings.
3. The leaking under this section of roofing is due to the fact that the crazing has migrated down past the scrim to the underside of the sheet.
4. No cores were done at the time of the inspection but based on what we see we think there is polyisocyanurate insulation on the metal decking and the TPO membrane mechanically fastened over the insulation. In the many TPO failures we have been able save some of the insulation.
5. The membrane at this point has gone too far to provide a suitable surface to apply a coating. As seen on the roof there has been many coatings applied. Most of them are not bonding and the crazing is migrating through the coating.
6. We recommend that a plan for replacement is implemented right away.

Metal Roof Section:

1. This roof system is a Berridge metal roof panel called Bermuda. This roof is designed to be applied on roofs with 3.5" per foot and greater. The current condition has valleys, hips, and ridges less than 1.5" and the main field of the roof is approximately 2.5" per foot slope with the flat portion of the panel less.
2. There are defects due improper installation details in the ridge flashing, hips, and ridges.
3. Improper use of plastic foam closures instead of neoprene foam closures.
4. The water is getting in behind the panel at the laps, joints, and details. The water is then running in the flutes of the metal decking until it is gets to a lap or fastener hole. Then the water falls down onto the lower metal decking and travels until there is a lap, hole, or duct cutout. This explains the consistent water staining in the ceiling tiles under the metal roof areas.
5. There is no way to trace the leaks to start a program of sealing. Unfortunately, the roof was installed on the improper slope and the details are wrong. The only way to fix this is to remove and replace. Also, there is one other factor, and it is the sub straight conditions. We need to perform destructive testing see what they used for the underlayment and insulation. Currently there are no signs of insulation in the attic space. The assembly could be under insulated.

Budget

Area 2		
Metal Roof	$38.00 x 10,850 Sqft =	$412,300.00
TPO Roof	$34.00 x 3,000 Sqft =	$102,000.00
Curbs, electrical, drains & gas items	$ 2.50 x 3,000 Sqft =	$ 7,500.00
Contingency 8%		$ 41,144.00
Total MACC		$562,944.00

Note:

1. Costs are plus gross receipts tax.
2. A design engineering is needed for the reroof project we suggest that a firm with experience with these types of systems and building type.

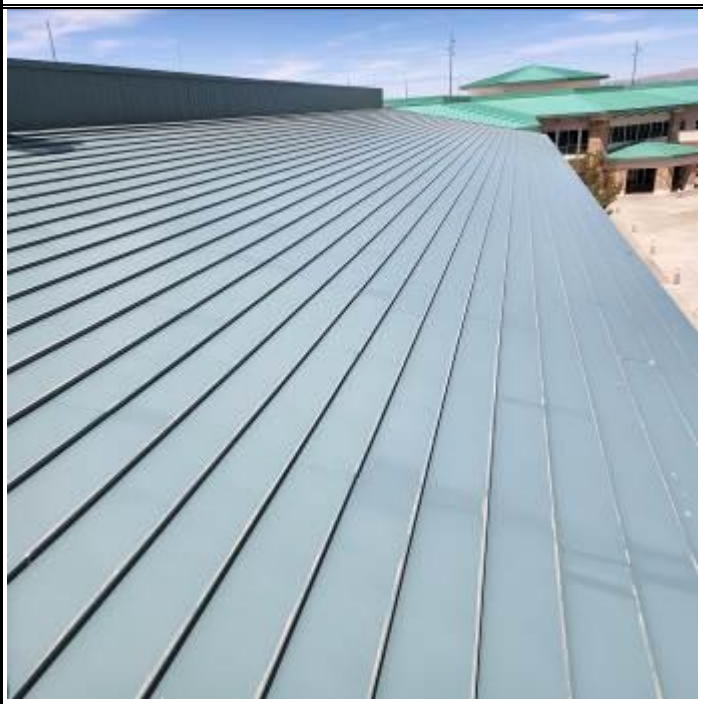
Respectfully,

David R. Armstrong

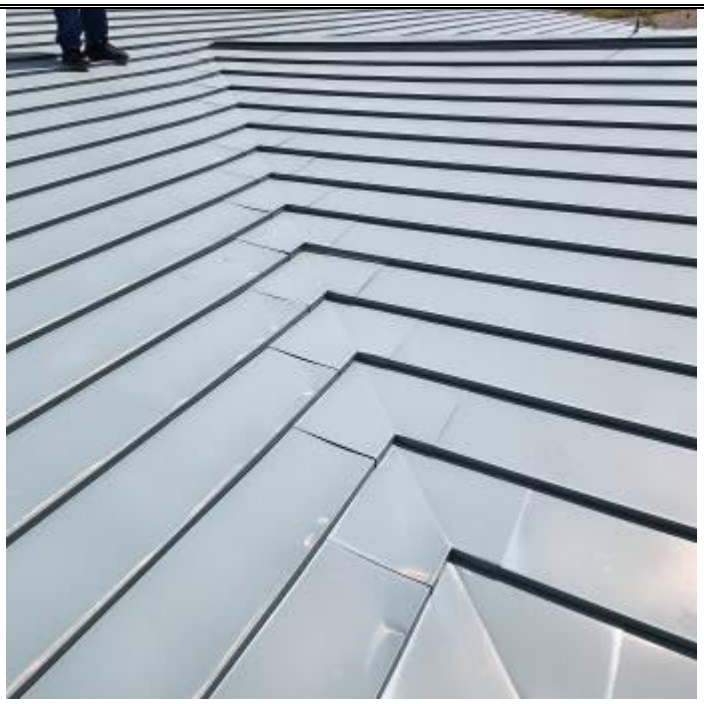
David R Armstrong
Mobile: 505.235.7596
Email: Davida@agiconsultants.com

PHOTOS

Metal Panel Roof



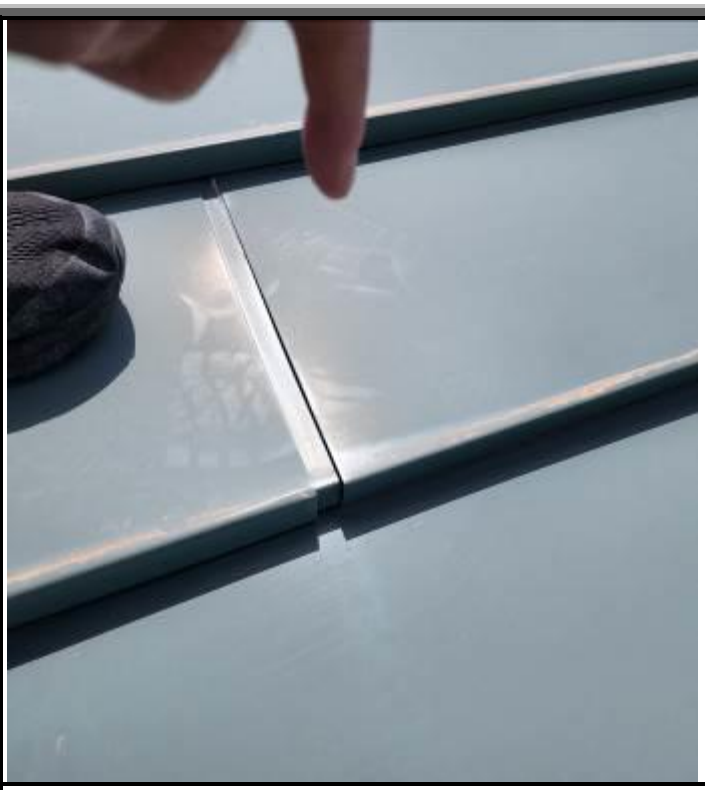
001 overview of Berridge metal roof panel called Bermuda. The roof is less than the manufacturers 3.5” per foot slope.



002 Overview example of valleys and hips with slopes less than 1.5” per foot

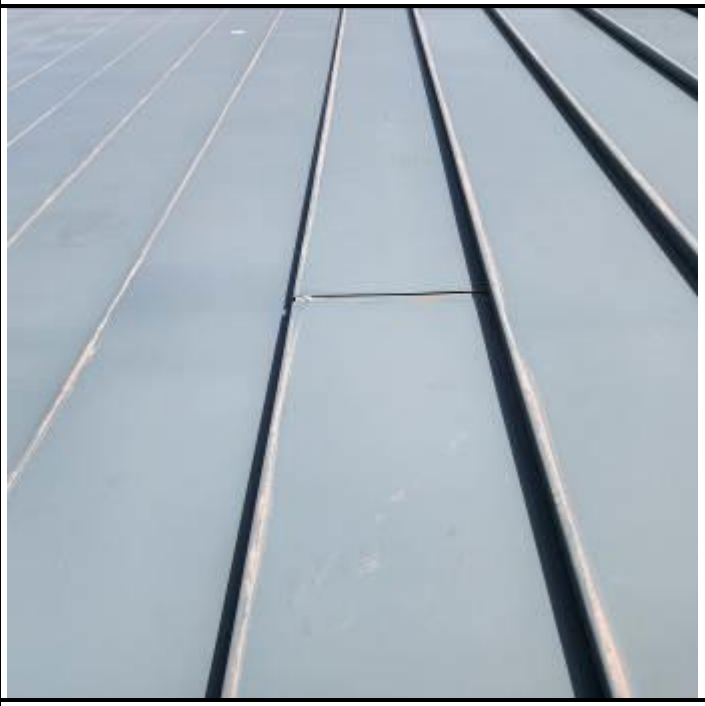
003 Typical of joints that are open in valley

004 Overview of Typical conditions of the hips ridge fasteners are rusted and improper sealing of joint.



005 Typical of splice plate that is open more than ¼" between panels.

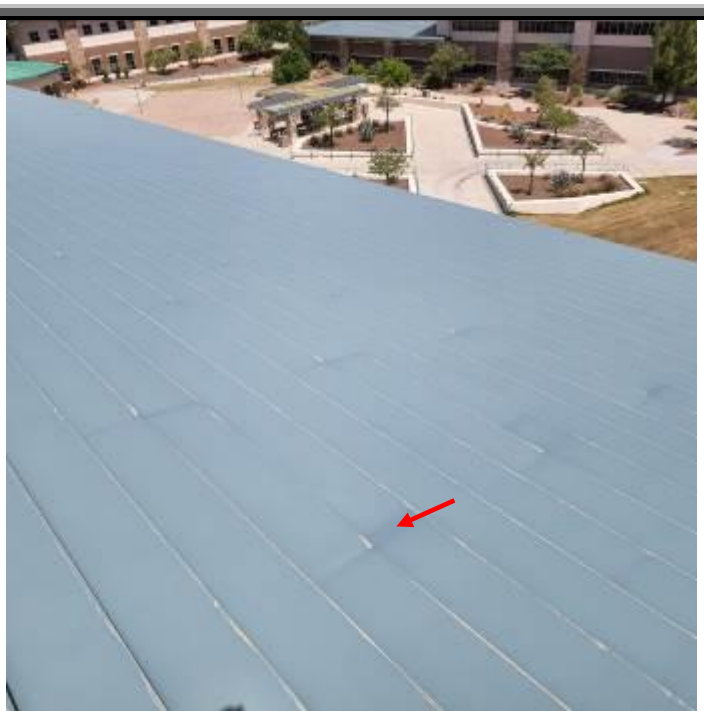
006 Overview of open panels at valley. Overview of rusted area



007 Typical overview of open joints and residue left from standing water

008 Typical overview of hip, residue left from standing water and water staining of panels.

009 This photo highlights the opening at the laps. We suspect that water is entering at this joints and along the side laps.



010 The arrows are showing where water is getting out under the panel. This means that water is traveling behind the panel.

011 Typical of open seams joints.

012 Typical of open seams joints and residue left from standing water.

013 Typical slope on the valleys, and panel

014 Overview of residue left by standing water and water stains coming from bottom of panel.

015 The arrows show residue of where water was standing and staining of panel.

016 The arrows show residue of where water was standing and open joint.

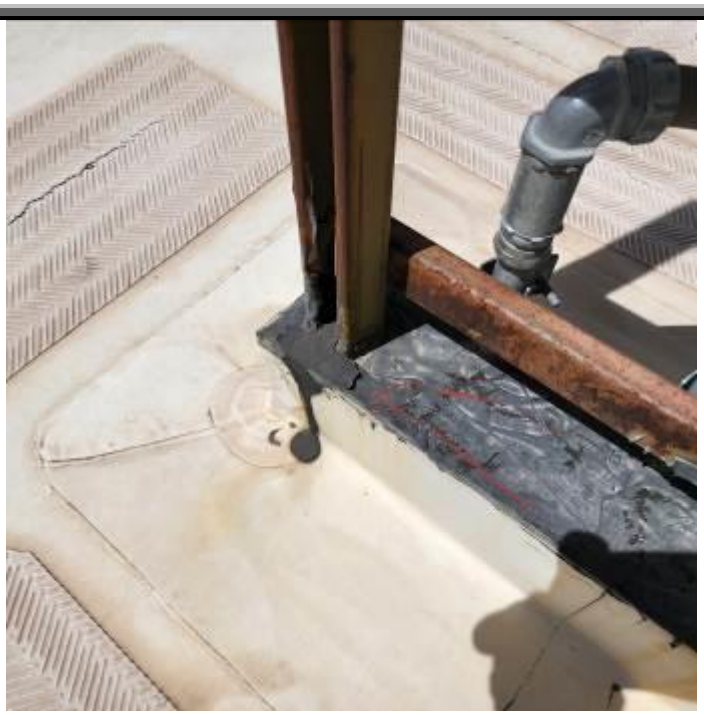
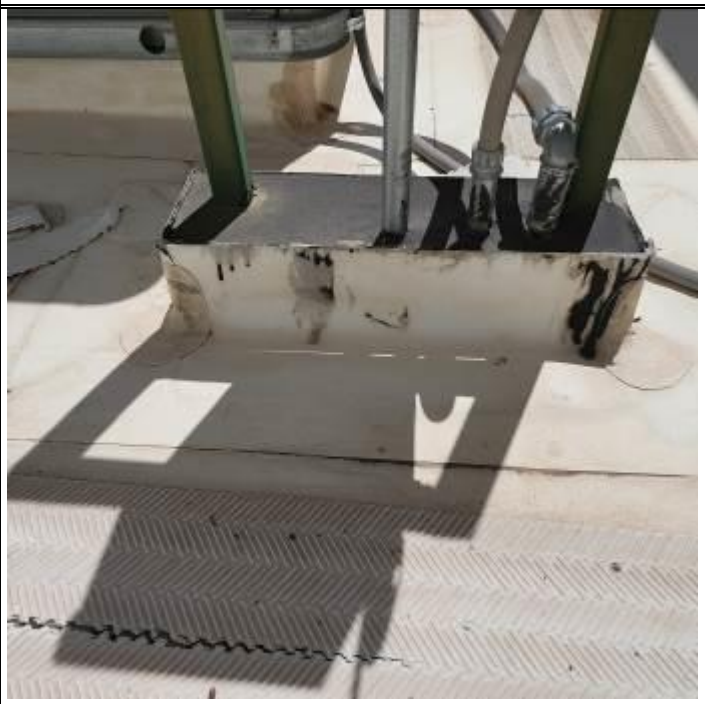
TPO Roof

017 TPO membrane is deteriorating. The lines are crazing that is down beyond the scrim.

018 overview of deteriorating TPO pipe boots.

019 overview of cut in membrane.

020 overview of cut and divot in membrane

	
021 overview of deteriorating TPO membrane.	022 overview of repaired pitch pan.
	
023 overview of repaired pitch pan.	024 Typical overview of walk pads that are deteriorating.

	
25 overview of deteriorating TPO corner patches.	26 overview of TPO between electrical box and wall and attempt to seal a water leak.
	
028 overview of deteriorating TPO corner patches.	029 overview of TPO roof area.