OCTOBER 28, 2024

T-Mobile Park

Presentation to the
Washington State Ballpark
Public Facilities District (PFD)
on the
2024 Annual Inspection

T-Mobile Park
1250 1st Ave S.
Seattle, WA 98134

Thomas Duffy, PE
Principal

Thornton Tomasetti

Reach

Our Locations

5 Continents

1200 Engineers, Architects and Professionals

38 Offices

Projects in 54 Countries

Albuquerque, New Mexico
Austin, Texas
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Ft. Lauderdale, Florida
Irvine, California
Kansas City, Missouri
Los Angeles, California Downtown/ LAX
Miami, Florida
Cupertino, California
New York, Madison Ave / Wallstreet
Newark, New Jersey
Philadelphia, Pennsylvania
Portland, Maine
San Diego, California
San Francisco, California
Seattle, Washington
São Paulo, Brazil
Toronto, CA
Washington, D.C.
West Hartford, Connecticut

Bristol, UK
Edinburgh, UK
Glasgow, UK
London, UK (Head Office)
London, UK (PLC City Office)
Moscow, Russia
Beijing, China
Hong Kong, China
Shanghai, China
Mumbai, India
UAE
Ho Chi Minh City, Vietnam
Christchurch, New Zealand

Weidlinger locations
Shared Locations
Thornton Tomasetti Locations

MAJOR STADIUM EXPERIENCE

MLB Ballparks

Angel Stadium of Anaheim, Anaheim, CA

AT&T Park, San Francisco, CA

Chase Field*, **Inspection & Maint.,** Phoenix, AZ

Kauffman Stadium Renovations, Kansas City, MO

Marlins Park* **Peer Review & Insp,** Miami, FL

Miller Park* **Analysis & Roof Rehab**, Milwaukee, WI

Nationals Park, Washington, DC

PETCO Park, San Diego, CA

PNC Park, Pittsburgh, PA

Safeco Field* **Analysis and Roof Rehab**, Seattle, WA

U.S. Cellular Field, Chicago, IL

Wrigley Field Renovations, Chicago, IL

Yankee Stadium, Bronx, NY

**** Significant movable element***

NFL Stadiums

The Adaptive Reuse of Soldier Field, Chicago, IL

Ford Field, Detroit MI

Georgia Dome, Atlanta, GA

Lambeau Field, South End Zone and North End Zone Expansions, Green Bay, WI

Lincoln Financial Field, Renovation, Philadelphia, PA

LP Field, Nashville, TN

Mercedes-Benz Stadium*, **Review and Support,** Atlanta, GA

Mercedes-Benz Superdome, Enhancements 2009-2011, New Orleans, LA

MetLife Stadium, East Rutherford, NJ

Hard Rock (Dolphins) Stadium, Miami, FL

State Farm (Univ. of Phx) Stadium*,** Annual Serv, Phoenix, AZ

U.S. Bank Stadium*,** Minneapolis, MN

2024 INSPECTION SCOPE:

1. Bowl & Garage
2. Retractable Roof (and supporting structure)
3. Mechanization System
4. Spot Cleaning & Painting Program
5. Data Assessment

BOWL AND GARAGE

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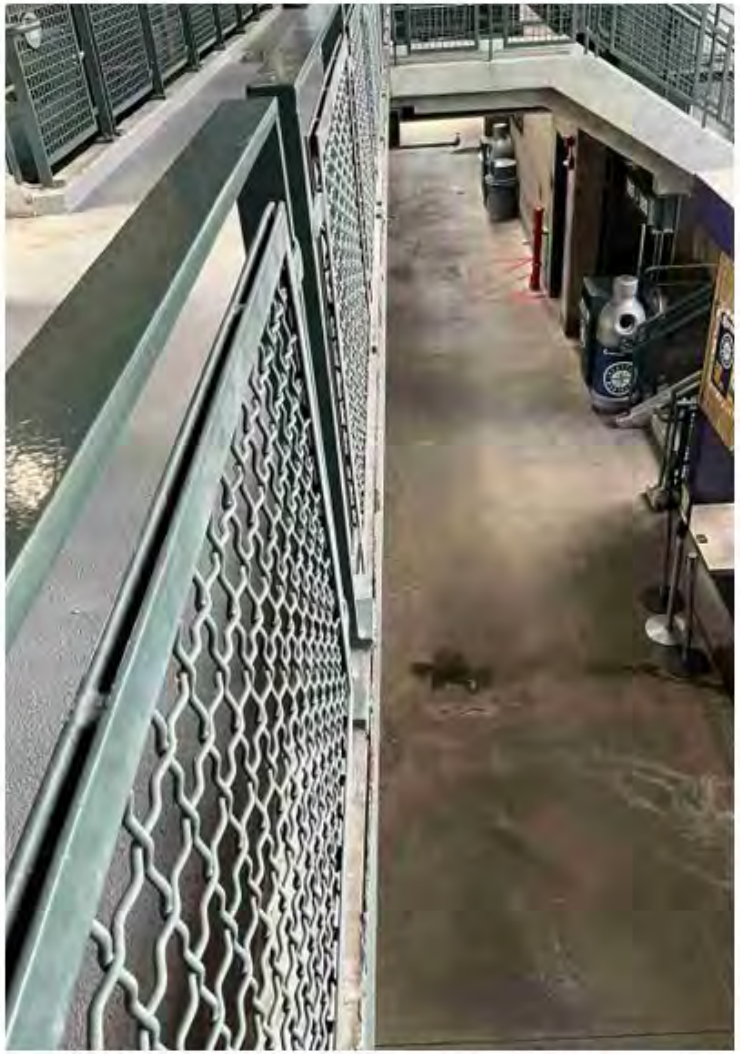
Designation Tier	Slab Edge Length (ft)	Total Slab Edge Percentage (%)
0	11,540	59.9
1	1,388	7.2
2	276	1.4
3	1,348	7.0
4	4,614	24.0
5	95	0.5
Total	19,262	100

Table 1. Tier Designation of Damage or Deterioration

Designation Tier	Description of Damage or Deterioration	Repair Procedure
0 Intact	≤ **1/16" gap** between bent plate and concrete slab edge	No actions required
1 Superficial	≤ **1/4" gap** between bent plate and concrete slab edge	**Remove organics** and inject gap with epoxy
2 Low	**> 1/4" gap** between bent plate and concrete slab edge	**Tier 1 repair + additional expansion anchors** required to close gap
3 Moderate	≤ **1/4" gap** between bent plate and concrete slab edge **+ long-term debris**	**Wire brush and grind out debris** and inject gap with epoxy
4 High	**> 1/4" gap** between bent plate and concrete slab edge **+ long-term debris**	**Tier 3 repair + additional expansion anchors** required to close gap
5 Critical	**Significant damage** to bent plate or concrete spalling through railing anchors	**Remove damaged bent plate and spalled concrete**; replace in-kind with expansion anchors and inject gap with epoxy

BOWL AND GARAGE

20240730_155843 (Page C-4)



20240730_141935 (Page C-17)

20240730_095328 (Page C-39)

Figure 19. Photos of Representative Slab Edge Conditions Categorized Tier 1

BOWL AND GARAGE

20240730_151624 (Page E-12)

20240730_114319 (Page E-31)

20240730_102030 (Page E-48)

Figure 21. Photos of Representative Slab Edge Conditions Categorized Tier 3

BOWL AND GARAGE

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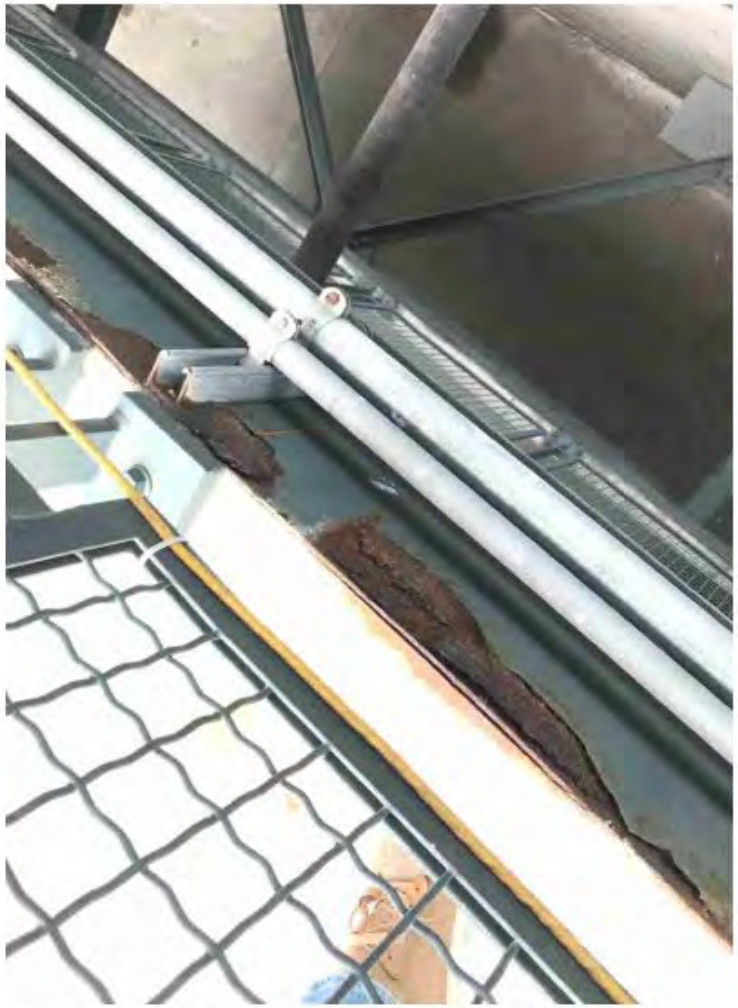

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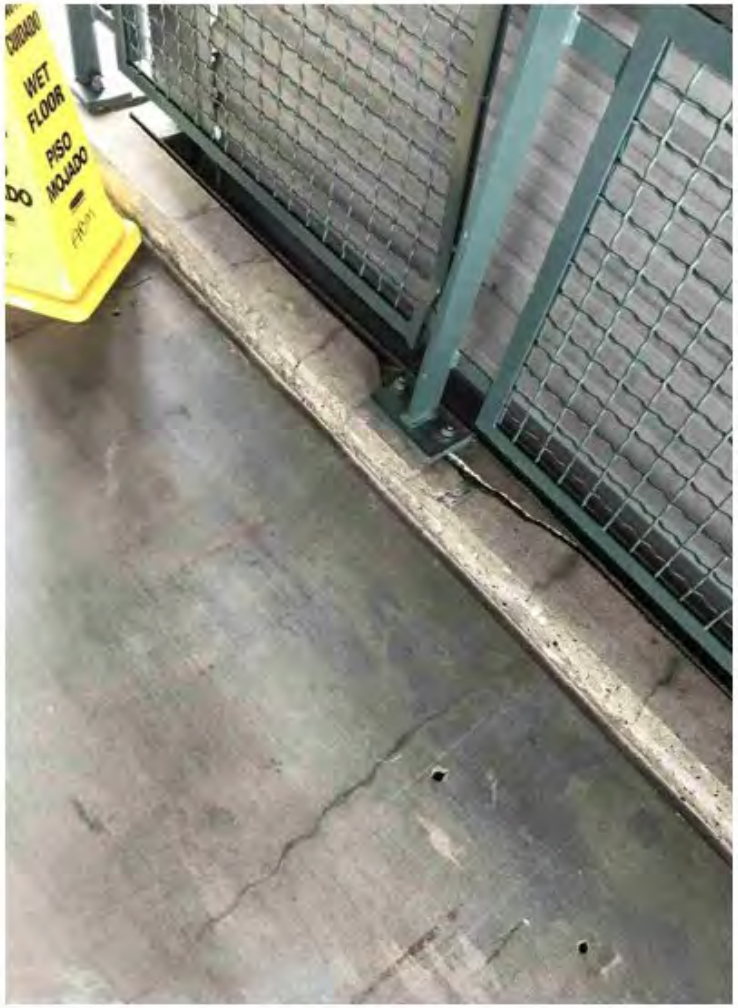

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Figure 23. Photos of Representative Slab Edge Conditions Categorized Tier 5

RETRACTABLE ROOF AND SUPPORTING STRUCTURE

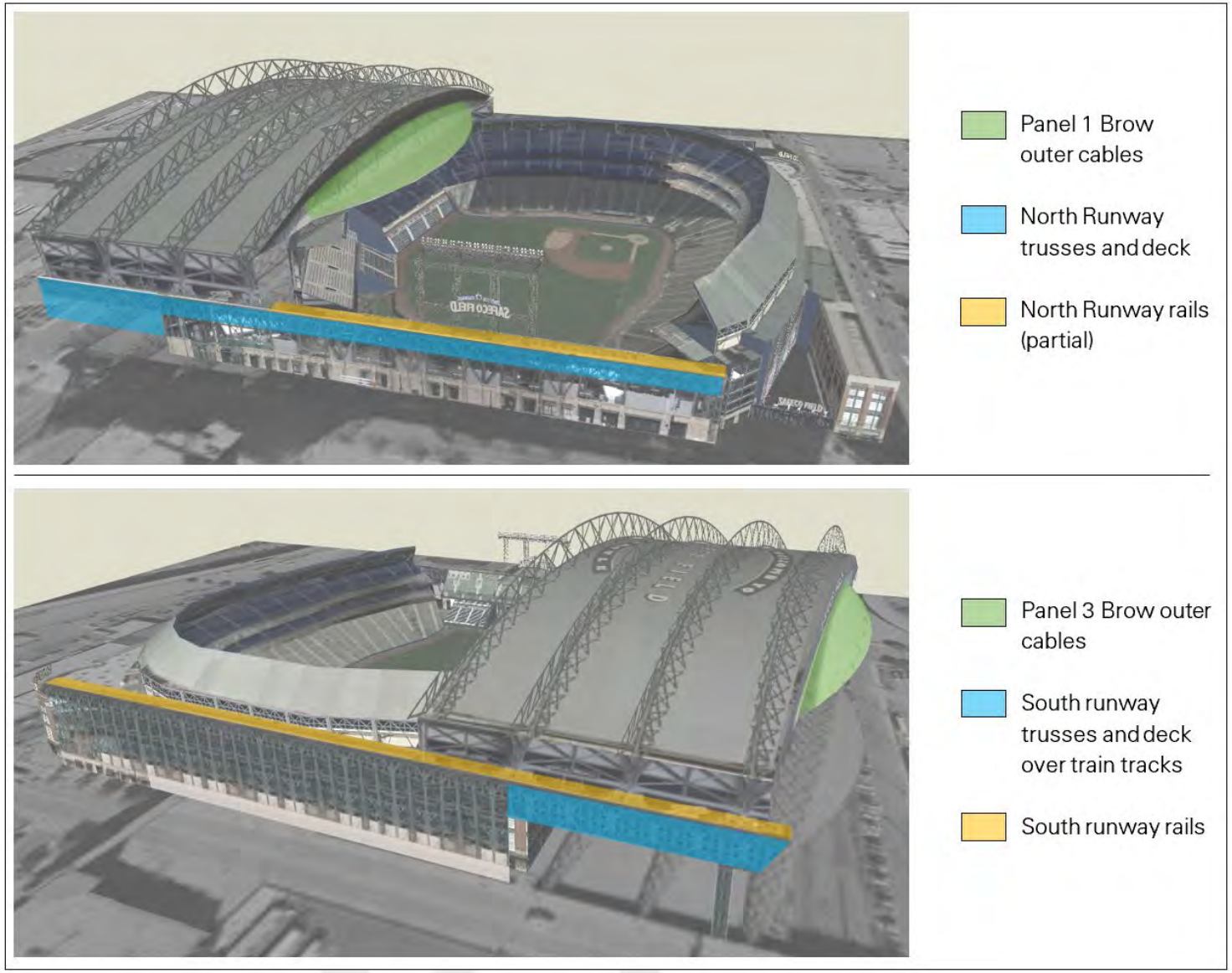
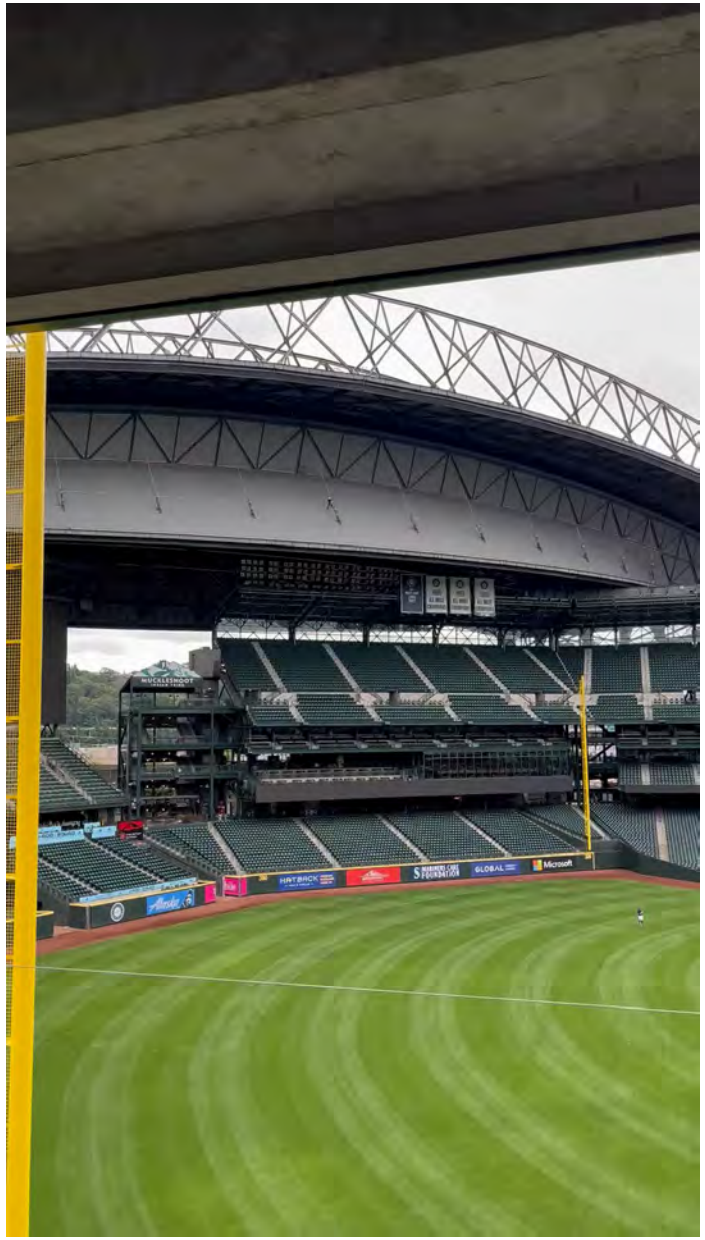


Figure 1: 2024 roof inspection scope.

RETRACTABLE ROOF AND SUPPORTING STRUCTURE



Thornton Tomasetti

RETRACTABLE ROOF AND SUPPORTING STRUCTURE

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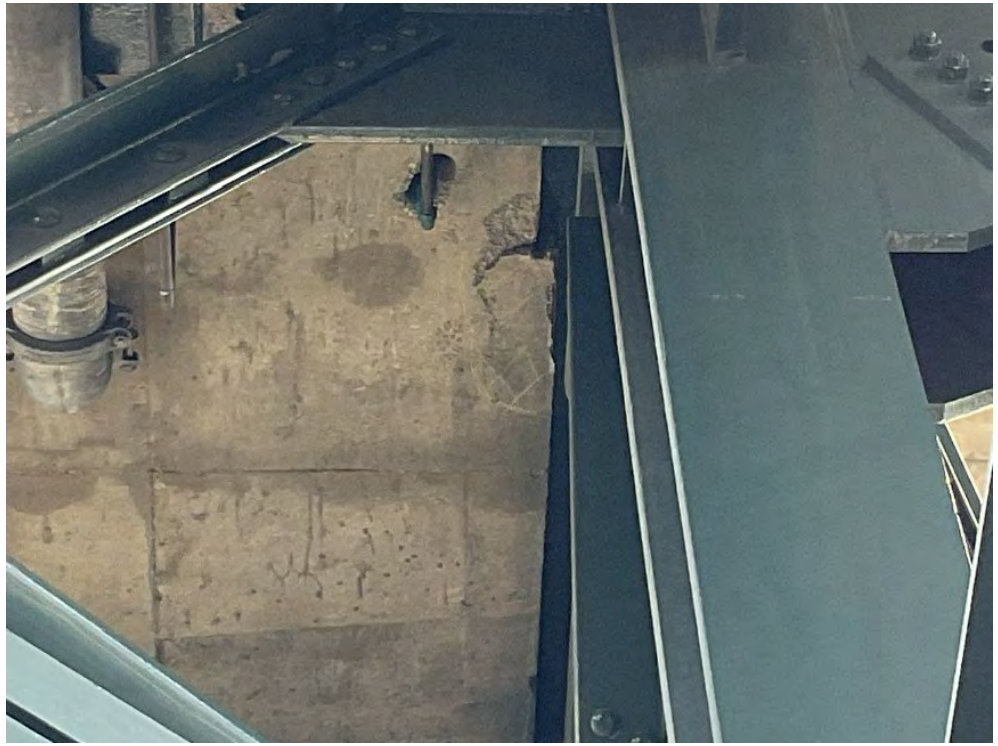

ROOF MECHANIZATION SYSTEM (MECHANICAL AND ELECTRICAL)

2.6.3 Motors

The insulation of the existing DC motor system were tested using a Megohmmeter. The testing was performed with a Fluke 1520 meter set to the 250 Volt setting. A ten-second sample duration was used.

Location	Armature [MΩ]	Field [MΩ]	Date	Comment
P1 N	11.59	2.489	3/20/2024	
P1 S	1.022	3.259	3/20/2024	
P2 NE	8.06	28	3/19/2024	
P2 NW	1.469	39.92	3/19/2024	
P2 SE	1.513	0.033	3/19/2024	Test performed prior to two motor replacements: 2SEEC2 on 3/20/2024; 2SEEC1 on 3/21/2024
P2 SW	6.15	6.34	3/19/2024	
P3 N	45.4	1.764	3/20/2024	
P3 S	21.67	2.347	3/19/2024	

The field readings for Panel 2 Southeast were observed to be low. Additionally, the overload circuit on motor 2SEEC1 was tripped. Further investigation of individual motors and gearboxes found:

- Motor 2SEEC1 had failed insulation and was indicating a direct short
- Motor 2SEWC2 had water intrusion into the top junction box as well as into the motor casing.

Based on these findings, TT recommended both motors be replaced. Mariners staff replaced both motors with spares the following day.

ROOF MECHANIZATION SYSTEM (MECHANICAL AND ELECTRICAL)

ROOF MECHANIZATION SYSTEM (MECHANICAL AND ELECTRICAL)

WHEEL BEARINGS

Panel 2 South Wheel Bearings Investigation

Over-worn, overloaded bearing. Dark grey grease. G5 wear

Worn bearing. Purple/brown grease. G4 wear

Normally-worn bearing.Purple. G3 wear

Brand new grease after 1 run. Mixed with residual grey grease. Purple G1-2 wear.

Brand new grease. Bright red. G1 wear

- Color scaling from G5 (bad) to G1 (good).
- After investigating several wheel bearings on Panel 2 South, various grease colors have been found indicating different amounts of wear.

GREASE REPLACEMENT