FACILITIES MAINTENANCE PLAN

October 2020

Prepared by

AUERBACH
ENGINEERING CORP

Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

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1.0 Executive Summary

At the request of the Truckee Tahoe Airport District (TTAD), a review of 27 buildings, four beacon towers, four security gates, and additional airport facilities was completed during the summer of 2019 to determine the condition of each building and develop a long-term maintenance plan for the structures. Inspections and analysis were performed by structural, mechanical, electrical, and civil engineers, a coating system specialist, a firm that specializes in the construction and maintenance of communications towers, and an architect knowledgeable in the Americans with Disabilities Act (ADA) compliance. From 2019 to 2020, a maintenance plan and budget was developed and refined based on the inspections completed for each facility and input from Airport staff.

The review found that several of the buildings' roofs have reached the end of their useful life and replacement or significant rehabilitation is required within the next five years. Most of the buildings/structures require the application of a surface coating (paint) in the next 10 years to protect the underlying structure from corrosion and degradation. Mechanical systems require ongoing maintenance and replacement over the next 10 years. Every facility requires improvements to electrical installations to update to current code, with the highest priority corrections being in high hazard areas such as around fuel tanks. The Warehouse Building requires improvements to conform with current building and accessibility codes. Drainage systems are generally in good condition, though several culverts require remedial action to improve functionality. The fire sprinkler systems in Hangars N and P need to be completed to meet current fire standards.

The estimated cost of identified updates and maintenance of structures for the next 10 years is approximately $5.7 million dollars. The Facilities Maintenance Plan (FMP) recommends an expenditures of approximately $650,000 for 2021 with a 3% increase in budget each year for the next 10 fiscal years, totaling approximately $7.45 million dollars.

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2.0 Introduction

Truckee Tahoe Airport District (TTAD) contracted with Auerbach Engineering to prepare a Facilities Maintenance Plan (FMP) to identify building maintenance needs, develop maintenance strategies, and quantify the required work both in terms of cost and timing. The areas of investigation and subconsultants performing the analysis included:

- Warehouse Code Compliance and ADA Information: Ward-Young Architects
- Structural Engineering and Metal Building Conditions: Gabbart & Woods Structural Engineers
- Paint and Coatings: KTA-Tator
- Mechanical Systems: Prosser Building and Development
- Electrical Systems: S.A. Engineering
- Drainage: Auerbach Engineering
- Utilities: Auerbach Engineering
- Towers: Day Wireless

Each of the investigators examined the interior and exterior of each structure, reviewed existing reports/plans, further interviewed Airport staff, and prepared a written draft report. Those draft reports were reviewed with staff and comments/questions/corrections from that initial review were incorporated into the consultants' reports provided in the following sections of the FMP.

2.1 Facility Map

Figures 2-1 and 2-2 present the TTAD on- and off-site facilities.

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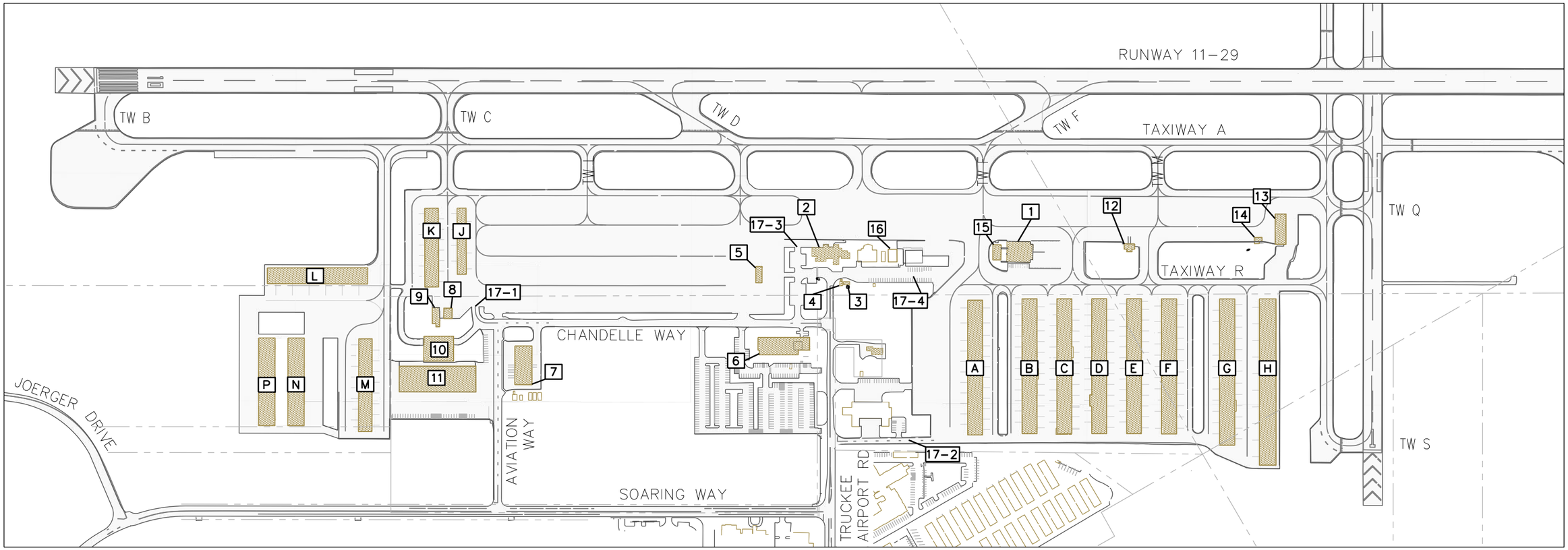

	Facility	Year Built	Square Feet	Construction Type
1	Hangar 1	1963±	7,500	Metal
2	Administration Building	2012	11,556	Steel, wood, & concrete
3	Generator Building & Generator	1990	260	Metal
4	Airport Beacon	1960±	-	Steel
5	Self Serve Tank	1999	-	Steel tank
6	WOB	2017	12,840	Steel
7	Maintenance Building	1998	9,352	Metal
8	Garage	1991	1,140	Metal
9	West Side Modular	1991±	1,728	Wood Frame
10	Fuel Farm	1994	-	Steel tank & canopy
11	Warehouse	1974	30,000	Metal
12	Phoenix Hangar	1985	1,000	Metal
13	EAA	1963	5,043	Metal & wood
14	Air Traffic Control Tower	2017	-	Metal
15	Hangar 1 Office	2019	1,920	Wood
16	Children's Playground	2013	1,640	-
17-1	Security Gate 4	2009	-	-

	Facility	Year Built	Square Feet	Construction Type
17-2	Security Gate 5	2009	-	-
17-3	Security Gate 6	2009	-	-
17-4	Security Gate 7	2009	-	-
A	Hangar Row A	1984	29,680	Metal
B	Hangar Row B	1977	29,680	Metal
C	Hangar Row C	1976	29,680	Metal
D	Hangar Row D	1981	29,680	Metal
E	Hangar Row E	1981	29,680	Metal
F	Hangar Row F	1987	29,680	Metal
G	Hangar Row G	1988	32,200	Metal
H	Hangar Row H	1988/1991	42,250	Metal
J	Hangar Row J	1970	8,840	Metal
K	Hangar Row K	1981	16,740	Metal
L	Hangar Row L	2004	24,304	Metal
M	Hangar Row M	2004	18,514	Metal
N	Hangar Row N	2018	21,950	Metal
P	Hangar Row P	2018	21,950	Metal

GRAPHIC SCALE
400 0 200 400
1 INCH = 400 FEET

Figure 2-1
On-Site Facilities
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

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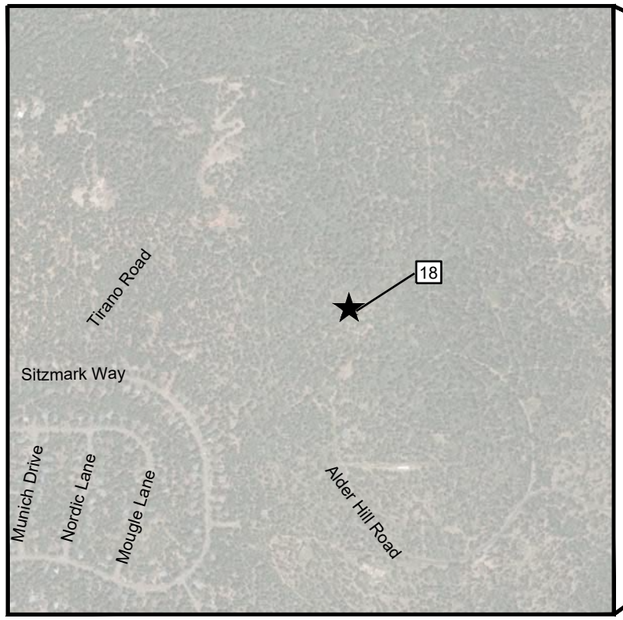

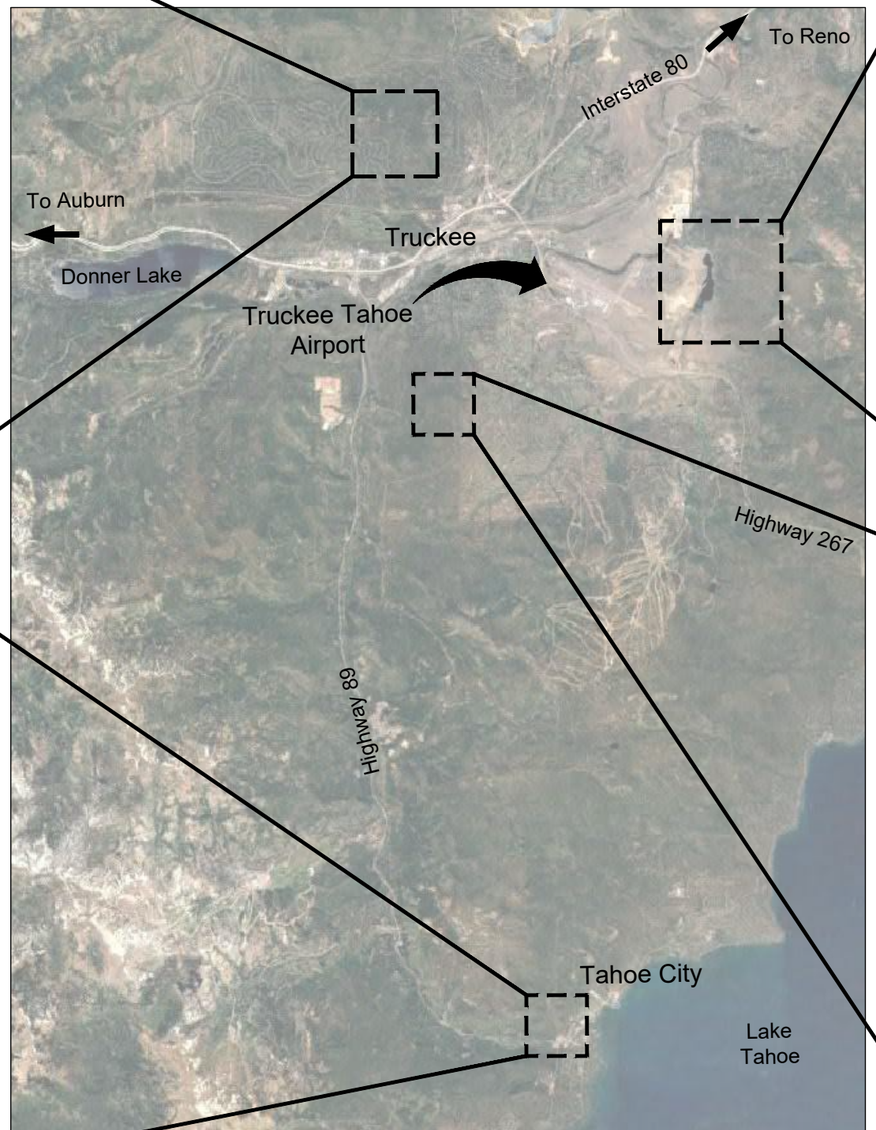

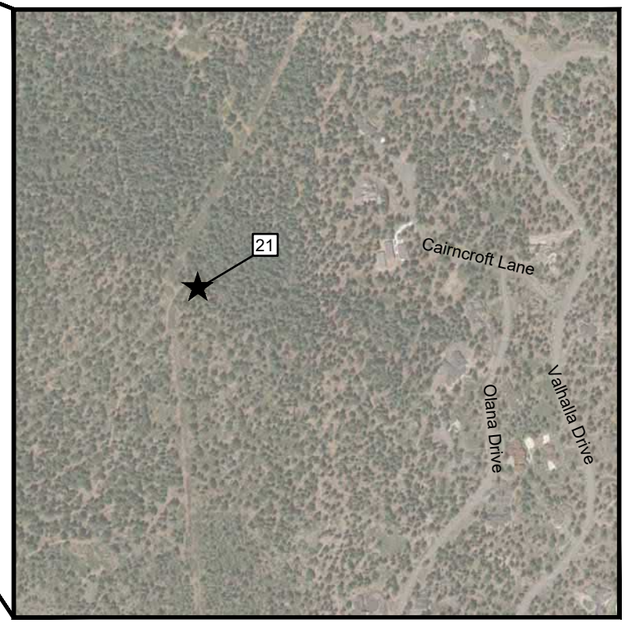

	Facility	Year Built	Construction Type
18	Alder Hill Beacon	1929	Steel
19	Tahoe City Heli Pad	2017	Concrete
20	Dry Lake Beacon	1929	Steel
21	Bald Mountain Beacon	1986	Wood

Figure 2-2
Off-Site Facilities
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

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2.2 Facility Descriptions

1. Hangar 1

Hangar 1 was constructed in 1965. This is the oldest metal building at the airport. Hangar 1 is 7,500 square feet, constructed of steel with aluminum siding and trim, raised seam roofing, steel doors, and a wood awning and support posts. It has a slab-on-grade isolated pier foundation. The windows and insulation were replaced in 2018. Gravity sanitary sewer service was extended to this facility in 2019. The floor was repaired in 2018 and the roof was replaced in 2020.

2. Administration Building

The Administration Building was constructed in 2012. It is 11,556 square feet, constructed of steel, wood, and concrete on a slab-on-grade perimeter foundation. TTAD is in the process of considering expansion options for the Administration Building.

3. Generator Building

The Generator Building was constructed in 1990 as an addition to the power vault/beacon shed. It is 260 square feet, constructed with a slab-on-grade foundation and corrugated metal siding. The generator and generator building will be replaced in the future. Maintenance recommendations should consider the timing of this replacement.

4. Airport Beacon

The Airport Beacon Tower and shed were likely relocated in the 1960's. The Airport Beacon Rotating Light Tower is approximately 50 feet tall and is of bolted, galvanized steel frame construction.

5. Self-Serve Tank

The Self-Serve Tank was constructed in 1999 and subsequently relocated with the 2012 Administration Building Project. The Self-Serve Tank consists of a 12,000 gallon horizontal fuel tank with a shed attached to the front of the tank. The Self-Serve Tank is bolted to a slab-on-grade foundation.

6. Warehouse Office Building

The Warehouse Office Building (WOB) is a steel framed 12,840 square-foot multi-tenant office/warehouse building constructed in 2017.

7. Maintenance Building

The Maintenance Building was constructed in 1998 with a north addition added in 2018. The Maintenance Building is 9,652 square feet, made of metal and has a slab-on-grade foundation.

8. Garage

The Garage was constructed in 1991. The garage is 1,140 square feet, constructed of factory coated corrugated metal siding and roll-up doors. The roof screws were replaced in 2016.

9. West Side Modular

The West Side Modular was constructed in 1991. The West Side Modular is a 1,728 square foot wooden structure consisting of T111 siding with wooden trim, decking and railings and metal roof panels screwed to the wood framing. It has a concrete perimeter foundation. The roof screws were replaced in 2016.

10. Fuel Farm

The Fuel Farm cover was constructed in 1996. It is located at the northwest end of the airport property. The Fuel Farm components include an overhead structure, four double-walled steel fuel tanks (labeled numerically starting at the eastern end of the tank farm and a diesel tank) and associated pumping, stairways and walkways leading up to and across the tops of the tanks, two concrete tanks, two pumping stations and a guard shack.

11. Warehouse

The Warehouse was constructed in 1974. It is a 30,000 square foot metal building with a slab-on-grade isolated pier foundation.

12. Phoenix Hangar

The Phoenix Hangar was constructed in 1985. It has an area of 1,000 square feet. The Phoenix Hangar was built with a slab-on-grade foundation. This building is currently being assessed by Forbes and Linchpin Structural Engineers for roof and lateral bracing issues.

13. EAA

The Experimental Aircraft Association (EAA) Building was constructed in 1963. This 5,043 square foot building has a structural steel frame with the walls closed in with wood framing and sheathing. The EAA Building was constructed with a slab-on-grade isolated pier foundation. The EAA Building is primarily faced with T-111 siding. The rear of the building has plywood applied to the facade. There is roughhewn wood trim around windows and doors. There is one roll-up garage door, two 41-foot byfold hangar doors, and a 12-foot sliding barn door. The EAA Building may be removed in the future to comply with runway visual zone setback requirements, so maintenance recommendations may be omitted if that occurs.

14. Air Traffic Control Tower

The Air Traffic Control Tower was built in spring 2017. There are plans to install a generator at the Air Traffic Control Tower in 2020.

15. Hangar 1 Office

The Hangar 1 Office was constructed in summer 2019. The one-story office building is 1,920 square feet and was constructed on a concrete slab.

16. Children's Playground

The playground is approximately 1,640 square feet and was constructed in 2013.

17. Security Gates 4-7

The four powered vertical lift gates throughout the Airport were installed in September 2009. The gates are located south of the ramp, west of the Administration Building, south of the playground, and south of Truckee Fire Station.

18. Alder Hill Beacon

The Alder Hill Tower was built in 1929. The beacon was added to the existing tower in 1964. Thus, the structure is now referred to as the Alder Hill Beacon. It is approximately 75 feet tall and is of bolted, galvanized steel frame construction. It has four legs constructed of 3" by 3" angles. There are horizontal and diagonal supports which are 2" by 2" angles.

19. Tahoe City Helipad

The Tahoe City Helipad is located at 292 Fairway Drive, Tahoe City, California and was constructed in 2017. The helipad consists of a 60-ft by 60-ft concrete pad, 10-foot tall windsock with LED obstruction light assembly, 10 inground pilot-controlled lights, and a security gate. Use is limited to emergency service agencies.

20. Dry Lake Beacon

The Dry Lake Beacon Light Tower was built in 1929 and relocated from Cisco Butte with a new foundation in 1999. It is approximately 55 feet tall and is of bolted, galvanized steel frame construction. It has four legs constructed of 3" by 3" angles. There are horizontal and diagonal supports which are 2" by 2" angles. The Dry Lake Beacon was updated to solar power in early 2020.

21. Bald Mountain Beacon

The Bald Mountain Beacon is a 62-foot wood pole with solar power. It was installed around 1986.

A. Hangar Row A

Hangar A was constructed in 1984. Hangar A is 29,680 square feet, constructed of metal with a slab-on-grade perimeter foundation. This building has a high and low roof section. Hangar A is sided with corrugated panels and has a concrete floor.

B. Hangar Row B

Hangar B was constructed in 1977. This is the second oldest building in the east side row of hangars. Hangar B is 29,680 square feet, constructed of metal with a slab-on-grade isolated pier foundation with asphalt floor. The roof of Hangar B was coated in 2015.

C. Hangar Row C

Hangar C was constructed in 1976. This is the oldest building in the east side row of hangars. Hangar C is 29,680 square feet, constructed of metal with a slab-on-grade isolated pier foundation and concrete floor.

D. Hangar Row D

Hangar D was constructed in 1981. Hangar D is 29,680 square feet, constructed of metal with an isolated pier foundation with asphalt floor.

E. Hangar Row E

Hangar E was constructed in 1981. It is 29,680 square feet, constructed of metal with a slab-on-grade isolated pier foundation with asphalt floor.

F. Hangar Row F

Hangar F was constructed in 1987. Hangar F is 29,680 square feet, constructed of metal with a slab-on-grade isolated pier foundation. It has a concrete floor.

G. Hangar Row G

Hangar G was constructed in 1988. Hangar G is 32,200 square feet. Hangar G is sided with corrugated panels and has a concrete floor.

H. Hangar Row H

Hangar H was constructed in two sections. Units 1-4 were constructed in 1988. Units 5-10 were constructed in 1991. Hangar H is 42,250 square feet. Hangar H is sided with corrugated panels and has a concrete floor.

J. Hangar Row J

Hangar J was constructed in 1970. Hangar J is 8,840 square feet. The roof panel construction is atypical for metal buildings. Hangar J was constructed with a slab-on-grade perimeter foundation and isolated pier with asphalt floor.

K. Hangar Row K

Hangar K was constructed in 1981. Hangar K is 16,740 square feet. Hangar K is constructed of corrugated siding with some opaque fiberglass panels inserted at a few locations. It was constructed with an isolated pier circular foundation with asphalt floor.

L. Hangar Row L

Hangar L was constructed in 2004 with metal, textured aluminum doors, and a slab-on-grade isolated pier foundation. Hangar L is 24,304 square feet and has a concrete floor.

M. Hangar Row M

Hangar M was constructed in 2004 with metal and a slab-on-grade isolated pier foundation. Hangar M is 18,514 square feet and has a concrete floor. Extensive roof repairs were completed in 2015.

N. Hangar Row N

Hangar N was constructed in 2018 with metal and a slab-on-grade isolated pier foundation. Hangar N is 21,952 square feet and has a concrete floor.

P. Hangar Row P

Hangar P was constructed in 2018 with metal and a slab-on-grade isolated pier foundation. Hangar P is 21,952 square feet and has a concrete floor.

2.3 Summary of Findings by Discipline

Ward-Young Architects – Warehouse

Ward-Young Architects was tasked with reviewing the Warehouse Building for conformance with California Building Code requirements for the types of uses (occupancy) by the lessees. The building was originally classified as Type II-B, but no longer qualifies as Type II-B due to the addition of combustible wood framing. Improvements need to be implemented to reclassify the building as Type III-B or Type V-B. The addition of an automatic fire sprinkler system is recommended to upgrade the building to comply with current standards, the Total Allowable Building Area, Type V-ZB construction and Total Allowable “Fire Area” for S-1 occupancies. A Commodity Classification Analysis of each tenant space should be considered to determine the type and quantities of material stored, and TTAD may consider limiting quantities of high

hazard product storage. The Fuel Farm should be analyzed to determine if it conforms with codes as it relates to the proximity of the Warehouse Building.

Ward-Young Architects also reviewed the Warehouse with respect to conformance to ADA requirements. Entrance and exit doors serving existing suites need to be corrected to comply with accessibility requirements. A detailed review of the existing common restroom facility should be performed to determine the upgrades required to conform to accessibility code. Accessible parking and path of travel should be provided to the entrance to Suite A.

Although not analyzed in the 2020 FMP, it is also known that Hangar 1 needs to be updated to conform with accessibility code.

Gabbart & Woods - Structural

Gabbart &Woods found that the buildings' structural elements (columns, beams, purlins) did not indicate failure or the need for remedial repairs with the exception of relatively modest door panel damage in several of the older hangars and two misplaced column anchors. They did observe wide-spread and significant issues with the metal roofs of many of the buildings. Two buildings require new roofs in the next five years. The majority of the buildings have damage from ice or snowplow activity that require remedial action, and some buildings have leaks that need to be repaired.

The recommendation of a roof coating consultant should be followed for 15 buildings observed to have coating damage or deterioration; for several of these buildings it may no longer be cost-effective or possible to re-coat. Garland Industries, a roof coating consultant, did not complete an independent assessment of the roof coatings of the facilities, but has estimated the timing and cost of the roof coating maintenance needs based on the structural assessment by Gabbart and Woods.

KTA-Tator – Building Coatings

KTA-Tator reviewed the coatings condition of 27 different buildings/structures. Components examined included wood, steel, aluminum, galvanized steel, and concrete. Conditions varied across the facilities, from the need for immediate painting to address substrate degradation or unsightliness to no near-term failures or maintenance requirements. Twelve components were recommended for remediation work in the near term (1-2 years). Fourteen components were recommended for maintenance painting in the mid-term (2-5 years). Twenty-two components were recommended for maintenance painting in five to 10 years. Twenty-eight components require no action in the next 10 years. Most surfaces can be repainted by spot repair and over coating the existing paint. In addition, the Fuel Farm will require complete coating removal and replacement due to rusting and poor adhesion.

Prosser Building and Development – Mechanical Systems

Prosser Building and Development reviewed and tested 89 mechanical units located throughout the 27 buildings. Many are proposed for replacement over the next 10 years due to age, operational inefficiency, and lack of repair parts or reliability. The consultant also found a large number of units that were not seismically braced and represent a potential hazard to users of the facilities. It is recommended that many of these units be braced as soon as possible due to the hazard.

S.A. Engineering – Electrical Systems

S.A. Engineering's review of the electrical components/installation in each of the buildings identified some concerns related to National Electric Code (NEC) compliance throughout the airport. It is understood that electrical components within each facility were likely in compliance with NEC at the time of construction, and many of the non-compliance issues are due to the age of the equipment and changing codes. There are many common issues such as tenant-installed light fixtures over wings, tenant-installed, improperly anchored equipment, lack of raintight fittings, and lack of grounding. These issues were primarily identified in the Hangars. In addition, some issues were identified at the Fuel Farm and the Self-Serve Tank. In these areas, due to the presence of jet fuel and aviation gasoline, upgrades are recommended to include the use of explosion proof fixtures, conduit terminations and similar specialized equipment/techniques.

Auerbach Engineering Corp. – Drainage and Utilities

Auerbach Engineering cataloged and assessed the condition of each storm drain structure throughout the airport. Most storm drain structures were found to be in good condition with the exception of two culverts that were severely eroded and several more that were nonfunctional due to burial or blockage. Known drainage issues were reported by airport personal. Auerbach has recommended remedial action or further investigation to address each of these issues.

Auerbach Engineering was also tasked with investigating the condition of airport utilities, including domestic water, sanitary sewer, power (on runways) and communication systems. Airport utilities are generally considered in good condition and regular maintenance is recommended. The fire suppression system in Hangars N and P needs to be completed per the recommendations provided by Auerbach Engineering. A system to monitor water quality throughout the airport's domestic water system should be installed. All other recommendations are regular (generally) annual maintenance procedures.

Day Wireless - Towers

Day Wireless assessed the condition of the Airport Beacon, the Alder Hill Beacon, and the Dry Lake Beacon. The Airport Beacon and Dry Lake Beacon were both determined to be in good condition. Annual monitoring should be conducted at these sites to monitor the condition of the finish and other minor issues.

The Alder Hill Beacon is in poor condition. Many of the installations need to be removed or replaced to meet current industry standards. The structure is sagging due to overloading, the antenna systems need to be properly secured, and the lightening rod needs to be raised. A safety cable climb and warning signs need to be installed. The condition of the tower is such that Day Wireless has recommended an Engineered Tower Analysis to be completed.

The Bald Mountain Beacon was not included in the 2013 FMP. It has been added to this update to the FMP but was not assessed by Day Wireless.

2.4 Suggested Timing and Budget Implications

Not every recommendation provided in the 2013 FMP was able to be implemented due to budget constraints. Recognizing budget constraints and ever-changing maintenance priorities, each consultant provided input on maintenance priorities and where possible, recommended timing and cost estimates for the various repairs. In some instances, the magnitude and uniqueness of the facilities' repairs prohibited the development of an accurate cost estimate. A cost estimate was prepared to summarize the estimated maintenance timing and cost for each facility from 2020 to 2029. Section 11.0 Facility Costs summarizes the estimated costs for each facility and the entire airport.

3.0 Architectural

Ward-Young Architects was contracted to analyze the existing Warehouse Building for conformance with current 2016 California Building Codes. Only the Warehouse was architecturally analyzed. In addition, this report analyzes changes and improvements implemented since the 2013 FMP. The analysis is primarily focused on general building code requirements for construction, occupancy types, exiting and accessibility, and does not cover all aspects of the code. It is assumed that when the building was constructed, it complied with the applicable codes in effect at the time. Limited field observations were performed in all suites with the exception of Suite B. Drawings prepared for tenant improvement plans identified below were reviewed based on the focus areas described above for the overall building. The interior tenant improvements were not reviewed for code compliance.

3.1 Improvements/Maintenance Plan Implementation

Subsequent to the preparation of the 2013 FMP, the following improvements to the building have been or are planned to be implemented in the future.

- 2016 - Round House Tenant Improvement, Suite E-3, drawings prepared by MWA, dated 2/16/16
- 2018 – Round House Tenant Improvement, Suite E-2, drawings prepared by MWA, dated 5/31/18
- 2018 – Tahoe Food Hub Tenant Improvement, Suite D-1 and portion of D-2, drawings prepared by MWA, dated 8/10/18
- Accessibility improvements to the existing non-conforming Common Unisex Restroom.
- 2019 Project MANA Tenant Improvement, Suite D-2 (currently in Design)

The completed projects identified above included the following specific improvements to address non-conforming conditions identified in the 2013 FMP:

- Second exits with protective snow shed structures have been added to reduce the exit travel distance to comply with the maximum distance of 100 feet.
- Illuminated exit signs and emergency egress lighting have been added at required exits.
- One- or two-hour fire rated partitions have been provided between the improved and adjacent suites where feasible and accessible.
- Door thresholds have been modified and signage added to conform to accessibility requirements at entries and exits.
- Three van accessible parking stalls and accessible paths of travel to building entrances have been added. Two accessible spaces are required based on the 45 spaces currently provided.

- New plumbing fixtures, grab bars and lavatory plumbing guards have been provided to address some of the non-confirming accessibility conditions in the Common Unisex Restroom.

3.2 Applicable Codes

- 2016 California Building Code (CBC)
- 2016 California Plumbing Code (CPC)
- 2016 California Fire Code (CFC)

3.3 General Building Information

- Originally constructed in mid-1970s
- 30,000 square foot metal building
- Current use: Warehouse with multiple tenants
- Non-fire sprinklered
- Fire alarm in each tenant space (to be confirmed)

3.4 Building Code Classifications

See Figure 3-1 TTAD Warehouse Building Diagram.

Occupancy Type

- S-1, Moderate Hazard Storage
- S-2, Low Hazard Storage
- F-1, Moderate Hazard Factory Industrial (suite E2/E3 and portion of suite D-1)

Occupancy Separations

- S-2/F-1-2 hour in non-sprinklered building
  1 hour in sprinklered building
- S-2/S-1-2 hour in non-sprinklered building
  1 hour in sprinklered building
- S-1/F-1-No separation required

Construction Type

When the building was originally constructed it should have qualified as Type II-B, non-combustible, non-rated construction. As improvements have been implemented, interior combustible wood framing has been utilized so it no longer qualifies as Type II construction. Type III-B allows combustible wood framing at the interior and Type V-B allows any materials allowed by the code.

The proximity of the adjacent Fuel Farm located to the north of the Warehouse Building impacts the required fire ratings of the exterior walls of both buildings. The buildings are located between 20 and 30 feet from each other. If a fire separation distance of 10 feet to an assumed property line is used, the north wall of the Warehouse Building would not need to be fire rated and would conform if it is classified as Type V-B construction. The wall would need to be one-hour fire rated if the building is classified as Type III-B construction. The occupancy group for the fuel facility is currently unknown. Assuming it is an H (Hazardous) occupancy type, the facility would likely be non-conforming since a 1-hour wall would be required on the south side of the existing structure where no wall currently exists.

Allowable Building Area

Although likely compliant at the time of construction, the Warehouse Building does not meet current building code requirements due to updates to the building code over time. As such, the Warehouse Building is considered a legal, nonconforming building. As an example, the Warehouse is not conforming with respect to current code requirements for non-sprinklered buildings based on Total Building Area for a building of Type V-B construction and the occupancy types currently included. The building exceeds both the Total Allowable Building Area and the Allowable "Fire Area" for S-1 occupancies.

The addition of an automatic fire sprinkler system would bring the existing building into conformance with the current code for Allowable Building Area. It should also allow the building to be analyzed based on non-separated occupancies and would preclude the need for fire-rated occupancy separations between the different occupancies.

3.5 California Fire Code

Storage of different material types is regulated by the CFC. The material storage observed in the S-1 occupancies located in Suites A, C and E-1 is located on high storage racks that appear to fall under the definition of high-piled combustible storage.

> "Storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3,658 mm) in height. Where required by the fire code official, high-piled combustible storage also includes certain high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities, where the top of storage is greater than 6 feet (1,829 mm) in height."

High-piled storage is addressed in CFC – Chapter 32 and Table 3206.2, which includes requirements for allowable volume, height, fire sprinkler and detection systems, building access, and smoke and heat removal. Also regulated are the arrangement of storage racks, allowable aisle widths and required fire barriers between storage areas. Fire sprinkler systems

have special requirements based on commodity type and height of racks such as in-rack sprinkler heads. The requirements of Chapter 32 vary depending on the types of commodities stored. This analysis did not include a commodity classification and quantity survey for the materials currently being stored. However, TTAD engaged Engineered Fire Systems, Inc. (EFS) to prepare a Fire Safety Analysis in 2016. The report, dated March 10, 2016, addressed the existing commodities present in the various suites at the time, and provided recommendations to bring the storage facilities and fire sprinkler system into compliance with 2013 Codes. Four different options for the fire sprinkler system design were presented including an option (4) which would allow the types of commodities stored at the time of analysis. It does appear that current uses and commodity types stored in the building are similar to those that were in place in 2016. However, the EFS analysis was based on 2013 Codes and the recommendations included should be re-evaluated based on the Codes in place and the uses present when they are implemented. A copy of the analysis prepared by EFS is attached for reference (Appendix B).

3.6 California Plumbing Code

Individual unisex restrooms have been added to serve suites E-2/E-3 and to serve suites D-1/D-2. The existing common unisex restroom serves the balance of the suites that do not contain restrooms. The occupant load factors in Table A CPC – Section 422 results in a total occupant load of four using the common restroom which allows the existing single use, unisex restroom. Drinking fountains are not required with occupant load less than 30.

3.7 Recommendations

The addition of an automatic fire sprinkler system should be considered to bring the building into compliance with current code for the Total Allowable Building Area for the most restrictive occupancy type, the requirements for type V-B construction and the Total Allowable “Fire Area” for S-1 occupancies. Since the building would comply with the requirements for the most restrictive occupancy type, occupancy separations should not be required between the occupancies currently included in the building.

The existing non-rated north wall adjacent to the existing fuel storage facility should also be in compliance with the addition of a sprinkler system. The sprinkler system design should address any specific requirements for allowed material storage including high-piled combustible storage.

A detailed Commodity Classification Analysis of each tenant space should be considered to determine the type and quantities of material stored. This is a specialized review by a fire protection consultant where the items being stored are evaluated for code conformance and hazard risk. This analysis should identify specific code requirements for high-piled combustible storage (see discussion above under CFC). TTAD may want to consider limiting quantities of

high hazard products stored in the building.

An analysis of the existing adjacent Fuel Farm should be considered to determine if it conforms to current codes as it relates to its proximity to the Warehouse Building.

Entrance and exit doors serving the existing suites that have not been corrected to comply with accessibility requirements should be addressed.

The existing common restroom facility is not currently in full compliance with accessibility codes. A detailed review should be performed to determine remaining upgrades required to conform to code (door clearances, accessory requirements, etc.). These upgrades would be mandated by future alterations to any tenant spaces that will use the common restroom.

Accessible parking and path of travel should be provided to the entrance to Suite-A.

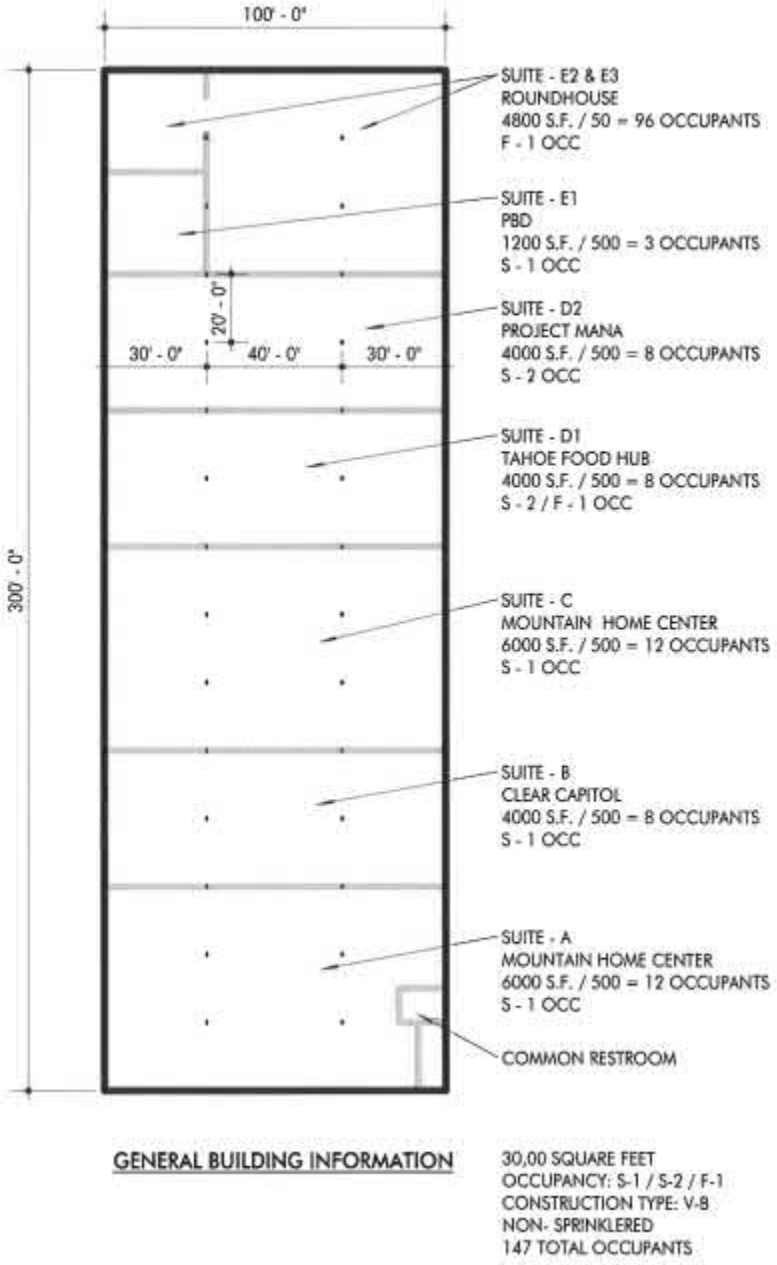

Figure 3-1 TTAD Warehouse Building Existing Conditions

4.0 Structural

Since the 2013 FMP, coatings have been placed on some roofs. Some of those coatings are showing signs of failure. If roofs are needing to be coated instead of replaced, the services of a reputable roof coating consultant and installer should be engaged. If they are unable to warrant the work due to the existing conditions of the roofs, then the only other option left is to replace the roofs as needed.

Damage to wall panels from sliding and drifting snow continues to be an issue on most of the older buildings, especially on the north sides. Without addressing the issues and implementing fixes, damage to the buildings will continue.

4.1 Individual Building Assessments

Building 1 Hangar 1

i. Roof
    a. The roof was replaced in September 2020.
ii. Wall Panels
    a. On north side of building, new metal panels have been installed on furring to approximately 8’-0” above grade.
    b. There numerous areas where the wall panels on the south side have been damaged due to snow build up against the building. Wall panels have kinks or crimping damage from snow.
    c. Some wall panel fasteners are loose .
iii. Recommendations
    a. Protection from snow build up for the north side wall panels has been installed. Similar protection should be installed on the south side of the building to mitigate further damage to the wall panels. Loose or missing fasteners should be tightened or replaced.

Building 2 – Administration Building

i. Roof
    a. The sloped areas of the roof appear to be in good condition. There is some bubbling and cracking on the flat areas of the roof.
ii. Walls
    a. The walls of the building appear to be in good condition.
    b. There are some loose screws noticed in the fascia of the south side of the flat roof on the west end of the building.

iii. Recommendations
   a. This building is relatively new and in good condition. Regular maintenance should consist of touch-up painting, checking for and tightening loose siding screws and fasteners and inspecting the roofs for damaged shingles.

Building 3 – Generator Building

i. Roof
   a. The roof panels on the lower portion of the roof appear to be in good condition.
   b. The roof panels on the upper portion of the roof show signs of failed paint/ coating on the eave line of the panels, probably from snow and ice damage.

ii. Walls
   a. The wall panels appear to be in good condition.

iii. Recommendations
   a. Any loose or missing fasteners should be addressed. Any leaks should be repaired. The recommendations of a roof coating consultant should be followed regarding the type of protective coating to use for this specific building, roofing and conditions.

Building 4 – Airport Beacon

i. The beacon appears to be in good condition. Several areas of paint have flaked off and need re-painting.

Building 5 – Self-Serve Tank

i. This large fuel tank appears to be in good condition.

Building 6 – Warehouse Office Building (WOB)

i. This building was constructed in 2017 and is in good condition.

Building 7 – Maintenance Building

i. Roof
   a. North end of building is new and new standing seam roof appears to be in good condition.
   b. Numerous skylights appear to have been covered and patched on the older section of the roof.

ii. Walls
   a. Wall panels appear to be in good condition.
   b. There is damage to door jamb trim on west side.

iii. Recommendations

a. Any loose or missing fasteners should be addressed. Any leaks should be repaired. The recommendations of a roof coating consultant should be followed regarding the type of protective coating to use for this specific building, roofing and conditions. Wall siding and trim piece fasteners should be checked and tightened as required. Repair and or replace damaged members as required.

Building 8 – Garage

i. Roof
   a. Roof appears to be in good condition. New screws were installed in some locations in 2015.
   b. Some older screws show signs of rust and deteriorated washers and some screws are loose and should be re-tightened.
   c. Roof panel paint is flaking in areas.

ii. Walls
   a. There is some damage at the southwest corner trim.
   b. There is a gash in the siding on the west side.

iii. Recommendations
   a. Any loose or missing fasteners should be addressed. Any leaks should be repaired. Wall siding and trim piece fasteners should be checked and tightened as required. Repair and or replace damaged members as required.

Building 9 – West Side Modular

i. Roof
   a. Roof appears to be in good condition. New screws were installed in some locations in 2015.
   b. There is some minor paint damage and rust at the eave on the east side.

ii. Walls
   a. Paint on skirt board of building shows heavy wear and needs to be re-painted.
   b. Wood siding panel on south side exhibits some buckling.
   c. (2) deck piers on southwest deck appear to have failed and are crumbling.

iii. Recommendations
   a. Any loose or missing fasteners should be addressed. Any leaks should be repaired. The recommendations of a roof coating consultant should be followed regarding the type of protective coating to use for this specific building, roofing and conditions. The exterior of the building should have a protective coating of paint installed after any loose fasteners have been replaced and siding repaired. The cracked and crumbling deck piers should be repaired and or replaced to preclude possible failure.

Building 10 - Fuel Farm

i. Roof
   a. The roof appears to be in good condition.
   b. Foil faced adhesive patches in numerous locations are damaged from snow and ice and their effectiveness in questionable.

ii. Recommendations
   a. Any loose or missing fasteners should be addressed. Any leaks should be repaired. The recommendations of a roof coating consultant should be followed regarding the type of patching and any protective coating to use for this specific building, roofing and conditions.

Building 11 – Warehouse

i. Roof
   a. Roof was coated in 2017. Coating repairs were completed in September 2020 while the roof was under warranty.

ii. Walls
   a. Wall panels on the north side of the building show damage from snow and ice build-up against the building.
   b. Gutters on the south side (west end of building) appear to have damage from snow and ice.
   c. Wall panels on south side of building (west of Units B & C) appear to have damage from snow and ice buildup against the building or possible vehicular damage.
   d. Wall panels on east end show damage from snow/ice/vehicles
   e. Wall panels on east end have corrosion damage at base of panels

iii. Recommendations
   a. This roof was coated in 2017 and repaired in September 2020.
   b. The wall panels on the north side have extensive damage. Remedial action should be taken as soon as possible to prevent the worsening of the damage. A protective plate steel barrier should be provided for the lower 5 feet of the wall. On the south and east sides, if wall panel damaged is from vehicular traffic, protective bollards, or similar should be installed to prevent vehicular contact with the building. Corroded wall panels should be repaired or replaced. Missing and loose fasteners should be addressed.

Building 12 – Phoenix Hangar

i. Roof
   a. Roof panels appear to be in poor condition.

b. Numerous patches, panel deformations, snow and ice damage.
c. Loose and rusted screws.

ii. Walls
a. Wall panel fasteners are missing on the east side, at base.
b. Snow and ice damage is evident on the wall panels on the south side of the building and at the recesses on the southeast and southwest sides of building.

iii. Recommendations
a. The roof panels should be replaced.
b. The wall panels need protection from snow and ice build-up against them. Loose and missing fasteners should be repaired and replaced.

Building 13 – EAA

i. Roof
a. Numerous holes are through the coating on the roof.
b. Foam below coating is damaged where coating is missing

ii. Walls
a. Flaking peeling paint, damaged door weather stripping and damaged trim on south side of building
b. Building needs paint.
c. North side of building base of wood panel siding is buckled.
d. Wood panel siding extends to grade level at the perimeter of the building.

iii. Recommendations
a. The recommendations of a roof coating consultant should be followed regarding the type of protective coating to use for this specific building, roofing and conditions.
b. The exterior wall siding and trim needs to be repaired and painted.

Building 14 – Air Traffic Control Tower

i. The tower sits on a series of shipping containers ((2) stacks of 3 containers). The exterior of the containers appeared to be in good condition. The interiors of the upper containers were not accessible. The middle level containers were empty, and the interiors appeared to be in good condition. The lower level containers were filled are used for storage and the interiors appeared to be in good condition. It is recommended that an inspection of welds and integrity be completed every two years.

Building 15 – Hangar 1 Office

i. This building was constructed in 2019. The roof and wall panels are in good condition.

Hangar Row A

i. Roof
   a. North end (high section) of roof has new standing seam roof and appears to be in good condition.
   b. Lower level of roof has older screws with deteriorating washers.
   c. Some screws are loose.
   d. There is corrosion at the lap seam at the middle of the roof.
   e. At the over frame area at the step in the roof, the panel paint coat is worn off and down to galvanize coat.
   f. There is damage to the over frame panels at the southeast corner.

ii. Walls
   a. North end wall panels have damage from snow build-up against wall panels. Panels are kinked and crimped.
   b. There is some panel damage at the bottoms of door panels on the west side.
   c. There is damage to a translucent panel on the east side (A21).

iii. Recommendations
   a. Loose and or missing fasteners should be addressed. Use shielded screws. Fix leaks as they occur. If a coating is necessary for this roof, the recommendations of a roof coating consultant should be followed regarding the type of protective coating to use for this specific building, roofing and conditions.
   b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion, further deterioration or replaced if damage is too great.

Hangar Row B

i. Roof
   a. Roof was coated in 2015.
   b. It appears roof was coated before old screws with neoprene washers or missing washers were replaced.
   c. Numerous areas of the roof show kinking or crimping of the roof panels toward the lower (east) side of the roof, possibly from snow and ice dam build up.

ii. Walls

a. North end wall panels have damage from snow build-up against wall panels. Panels are kinked and crimped.
b. Panel damage on west side (B22).
c. South east corner of building has damage to siding.
d. Panel damage on east side (B19, B11).
e. Translucent panel damage (B9).

iii. Recommendations

a. Replace screws with shielded screws as they fix leaks.
b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion, further deterioration or replaced if damage is too great.

Hangar Row C

i. Roof

a. Roof was coated in 2016.
b. It appears that roof was coated before old screws with neoprene washers or missing washers were replaced.
c. Numerous areas of the roof show kinking or crimping of the roof panels toward the lower (east) side of the roof, possibly from snow and ice dam build up.
d. Lower (east) eave coating shows signs of delamination from panels.

ii. Walls

a. North end wall panels have damage from snow build-up against wall.
b. Door panel damage (C24).
c. South east corner of building has damage to siding.
d. Door damage (C13).

iii. Recommendations

a. Replace screws with shielded screws as they fix leaks. Where roof coating appears to be failing, a roof coating consultant's recommendation should be followed regarding repairing or re-coating with a protective coating for this specific building, roofing and conditions.
b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion, further deterioration or replaced if damage is too great.

Hangar Row D

i. Roof
   a. Roof was coated in 2015.
   b. It appears that roof was coated before old screws with neoprene washers or missing washers were replaced.
   c. Fabric patches at crimped areas of roof panels are working loose.
   d. Numerous areas of the roof show kinking or crimping of the roof panels toward the lower (east) side of the roof, possibly from snow and ice dam build up.
   e. Screws noted that are loose and need to be tightened.

ii. Walls
   a. North end wall panels have minimal damaged areas from snow.
   b. South west corner of building has damage to siding.
   c. Door panel damage (D9).

iii. Recommendations
   a. Replace screws with shielded screws as they fix leaks. Where roof coating appears to be failing, a roof coating consultant's recommendation should be followed regarding repairing or re-coating with a protective coating for this specific building, roofing and conditions.
   b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion, further deterioration or replaced if damage is too great.

Hangar Row E

i. Roof
   a. Paint coat is non-existent on this roof.
   b. Large areas of rust on the panels.
   c. Numerous areas of the roof show kinking or crimping of the roof panels throughout the roof and especially toward the lower (east) side of the roof, possibly from snow and ice dam build up.
   d. Roof is in poor condition.

ii. Walls
   a. North end wall panels have damage from snow build-up against wall.
   b. Base of door has damage and rust evident (E16).
   c. Sealant at base of wall on south end of building ineffective and will trap moisture against panel base.

d. Trim at bottom of windows missing on south end of building.
e. Damage to south east corner of building.

iii. Recommendations

a. Loose and or missing fasteners should be addressed. Use shielded screws. Fix leaks as they occur. A roof coating consultant's recommendation should be obtained if a coating could be used to extend the life of this roof. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions. If a coating cannot be warranted, replacing the roof may be the only option.
b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great.

Hangar Row F

i. Roof

a. Paint coat on roof is badly worn.
b. Loose screws are evident on the roof.
c. Numerous areas of the roof show kinking or crimping of the roof panels toward the lower (east) side of the roof, possibly from snow and ice dam build up.

ii. Walls

a. North end wall panels have significant damaged areas from snow.
b. Door panel damage (F2, F16 & F18).

iii. Recommendations

a. Loose and or missing fasteners should be addressed. Use shielded screws. Fix leaks as they occur. A roof coating consultant's recommendation should be obtained if a coating could be used to extend the life of this roof. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions.
b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great.

Hangar Row G

i. Roof
   a. Paint coat on roof is getting worn.
   b. Shielded screws were used on this roof, some are working loose and need to be tightened.

ii. Walls
   a. North end wall panels have significant damaged areas from snow.
   b. Door panel damage (G4, G21).

iii. Recommendations
   a. Loose and or missing fasteners should be addressed. Use shielded screws. Fix leaks as they occur. A roof coating consultant's recommendation should be obtained if a coating could be used to extend the life of this roof. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions.
   b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great.

Hangar Row H

i. Roof
   a. First (4) hangars on north end of building have recently been re-roofed. This portion of the roof is in good condition.
   b. On south portion of roof, the midline lap joint of the roof has missing and loose screws and some patching has been attempted for leaks.
   c. On the low end (east) eave patching sealant has cracked.
   d. On the low end (east) side screws are loose and patches at screws have failed.

ii. Walls
   a. North end wall panels have significant damaged areas from snow build-up
   b. against wall.
   c. Panel fasteners are missing at base of north wall.
   d. Wall panel has puncture damage (H5).
   e. East side wall panels fasteners show signs of rust and some are loose.
   f. Typical sealant at bottom of translucent wall panels all along east side shows poor workmanship.

iv. Recommendations
   a. Loose and or missing fasteners should be addressed. Use shielded screws. Fix leaks as they occur. A roof coating consultant's recommendation should be obtained for the proper patching at joints and fasteners. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions.
   b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great.

Hangar Row J

i. Roof
   a. Roof appears to be in poor condition but has no reports of leaks. Even with unconventional roof fastening method.
   b. Paint coat on roof is badly worn.

ii. Walls
   a. North end wall panels have damage from snow build-up against wall.
   b. South west corner of building has damage to siding.
   c. Column anchor bolt was mis-placed and in-effective (between J1 & J3).

iii. Recommendations
   a. Since this building does not have any reported problems with leaks, the 2013 FMP recommended leaving the roof alone, until problems develop. There are still no reports of leaks. A roof coating consultant's recommendation should be obtained if a coating could be used to extend the life of this roof. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions.
   b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great. Misplaced column anchor bolt could be retro-fit with a new anchor bolt epoxy-set to the foundation.

Hangar Row K

i. Roof
   a. Roof appears to be in poor condition.

b. Paint coat is badly worn.
c. Areas of rust on the panels
d. Neoprene washers appear to be badly worn.
e. Numerous areas of the roof show kinking or crimping of the roof panels toward the lower (east) side of the roof, possibly from snow and ice dam build up.

ii. Walls
a. North end wall panels have minimal damaged areas from snow.
b. South east corner of building has damage to siding.
c. Door panel damage (K3).

iii. Recommendations
a. A roof coating consultant's recommendation should be obtained if a coating could be used to extend the life of this roof. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions, or replace the roof panels.
b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great. Mis-placed column anchor bolt could be retro-fit with a new anchor bolt epoxy-set to the foundation.

Hangar Row L

i. Roof
a. Roof has newish standing seam roof and appears to be in good condition.

ii. Walls
a. North end wall panels have significant damaged areas from snow build-up against wall.
b. Door panel at mid-level missing fasteners and is loose (L5).
c. Rust evident at door track at columns.

iii. Recommendations
a. Loose and or missing fasteners should be addressed. Use shielded screws. Fix leaks as they occur.
b. The north end wall panels need to be protected from snow build up against them. Replacing the panels without addressing the root problem will only be a temporary fix. Damaged wall panels around the building should be repaired to minimize moisture intrusion and further deterioration, or replaced if damage is too great.

Hangar Row M

i. Roof
   a. Roof appears to be in poor condition.
   b. Numerous attempts to patch leaks have been attempted.
   c. Do to poor original construction retrofit pieces have been installed on portions of the standing seam roof.
   d. Gaskets at sealant appear to be loose along ridgeline.
   e. Foil and heavy use of sealants used to try and fix leaks.

ii. Walls
   a. Wall panels appear to be in good condition.

iii. Recommendations
   a. A roof coating consultants' recommendation should be obtained if a coating or membrane could be used to extend the life of this roof. Follow those recommendations regarding the type of protective coating to use for this specific building, roofing and conditions, or replace the roof panels.
   b. Any loose or missing fasteners should be replaced or tightened, Repair any leaks as they occur.

Hangar Row N

i. This building is new (2018). The roof and wall panels are in good condition.

Hangar Row P

i. This building is new (2018). The roof and wall panels are in good condition.

4.2 Conclusions

The roofs of most of the buildings are at or nearing the point where they will need to be replaced due to failing existing coatings or the conditions of the roofs will not allow the application of a coating that would be warranted by a coating manufacturer.

Roof and wall leaks should be repaired as soon as possible. When repairing leaks, panel fasteners should be snugged down and/or replaced. New fasteners should be shielded type screws. When tightening fasteners on coated roofs, care should be taken not to further damage the coatings. Approved patching materials should be used where necessary.

Without previously supplied remedial actions taken to keep snow and ice from further damaging wall panels, the existing damage will be exacerbated.

Table 4-1. Five Year Structural Maintenance Plan

Action	Building														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Coat entire roof with coating system													X		
Replace all roof panels											X	X			
Re-work panel laps or repair areas			X												
Repair or replace lower section of damaged wall panels											X				
Repair corner, door & window trim							X	X					X		
Check comp. shingles, repair / replace		X				X									
Check all fasteners, roof and walls							X	X	X			X			
Replace fasteners as they fix leaks							X	X	X	X		X			
Maintain protection of exposed wood elements						X									
Touch up siding & trim paint / stain		X				X								X	
Tighten and/or replace loose / missing wall panel fasteners	X	X													
Add wall panel protection on north side of building											X				
Add wall panel protection on south side of building	X											X			
Add building protection from vehicular contact											X				
Re-paint				X											
Re-paint exterior wood siding									X				X		
Repair / replace deck piers									X						
Evaluate metallic patches										X					

Action	Building													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
Tighten and/or replace selected screws	X				X	X	X	X						
Coat entire roof with coating system						X	X							
Consider coating system as alternate to replacing panels					X				X	X				
Repair failed coating areas, if possible			X	X										
Replace all roof panels					X					X				
Re-work panel laps or repair areas								X						
Repair corner, door & window trim		X	X	X	X				X	X				
Check all fasteners, roof and walls	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Replace fasteners as they fix leaks	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tighten and/or replace loose / missing wall panel fasteners X								X						
Add wall panel protection on north side of building	X	X	X	X	X	X	X	X	X	X	X			

5.0 Coatings

KTA-Tator, Inc. (KTA) conducted coating/corrosion assessments on numerous structures at the Truckee Tahoe Airport in Truckee, California. The assessments were deemed necessary since the airport is in the process of preparing an overall maintenance plan. A detailed plan for maintenance painting was desired to be part of the overall FMP. A previous assessment was performed in 2013. This assessment will update the previous report. Mr. Ray Tombaugh, Senior Coatings Consultant, was asked to perform the investigation and prepare this report.

5.1 Summary

Twenty-seven different buildings/structures underwent a detailed coatings condition assessment. Up to nine different components were examined within the structures. In all, 76 different components were examined which included five different substrates (wood, steel, aluminum, galvanized steel, and concrete). Coating condition varied across the airport facility from areas in immediate need of painting as a result of substrate degradation or "unsightliness" to components that were recently painted with no evidence of any near-term failures or maintenance painting requirements.

1. Twelve components are recommended for remediation work within the next two years. This group includes the wood components that are significantly degraded, the steel structural members, roof rafters, stairways, seismic rods and other components at the Fuel Farm, components at the self-serve tank, steel surfaces at the Air Traffic Control Tower, the wood siding, trim and steel piping at the EAA Building, the entrance enclosures at the Warehouse, and the wood siding along the base of the West Side Modular.
2. Fourteen components are recommended for maintenance painting within two to five years as a result of coating delaminations or other unsightly conditions. However, there was no evidence of substrate degradation at this time. These surfaces primarily include the exterior Administration Building stairway, tanks at the Fuel Farm and Self-Serve Tank, the Hangar 1 unpainted galvanized siding wood surfaces and steel doors and the Hangar E siding and electrical equipment canopy.
3. Twenty-two components were recommended for maintenance painting after five years and before ten years. These surfaces include building siding and doors that was not recently painted, wood siding that is in good condition, and the concrete tanks at the Fuel Farm.
4. Finally, 28 components require no action for at least 10 years. These include the recently painted hangars and other buildings with corrugated siding and aluminum doors, the WOB Building and the Administration Building façade surfaces.

Most surfaces can be repainted by spot repair, or spot repair and over coating the existing paint. Pressure water jetting is used to remove any loose paint. Areas of exposed substrate are prepared and primed and then all surfaces are over coated. A few components, primarily at the Fuel Farm require complete coating removal by abrasive blasting and replacement with a new coating system. This operation is required since (1) the degree of rusting increased since the last assessment or (2) the existing coatings have poor adhesion and the substrate contains mill scale.

5.2 Scope of Field Assessments

The field assessments were conducted on July 30, 2019 and July 31, 2019 and included visual observations, adhesion tests and dry film thickness measurements. When deemed necessary, the coating was removed in order to examine the substrate. The assessment was performed on 27 structures and are shown on Figure 2-1, On-site Facilities. When multiple substrates are part of the structure (i.e. siding, doors, frames, etc.), the condition of each was evaluated. The assessments were conducted from grade/ground level. No climbing was done to reach elevated surfaces. The assessment data for each building / component investigated is reported in Table 5-2 – Coatings Field Assessment Data, appended to the report.

Chalk assessments were performed in accordance with ASTM D4214, Method C, “Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films.” The procedure is performed by moistening the fingertip and making one continuous rub 2” to 2.5” long. The material that accumulates on the finger is then compared to a pictorial reference standard. Chalking is evaluated on an even scale between 8 and 2, with 2 being the heaviest chalking.

Rusting was evaluated in accordance with SSPC-VIS 2, “Standard Test Methods for Evaluating the Degree of Rusting on Painted Surfaces.” The standard quantifies the degree of rusting on painted steel surfaces according to a 0 to 10 scale based on the percentage of visual rust present on the surface. A rating of 0 represents greater than 50% of the surface containing rust and a rating of 10 represents less than or equal to 0.01% of the surface containing rust. The distribution of rust is classified as spot rust, general rust, or pinpoint rust. Rust staining on the surface of the coating is excluded from the assessment.

Coating adhesion was evaluated in accordance with ASTM D6677, "Standard Test Method for Measuring Adhesion by Knife." ASTM D6677 involves making an X-scribe in the paint film and then lifting the coating with the knife blade at the intersection of the incisions. Adhesion is rated according to the amount of coating removed by the knife on an even number scale of 0 to 10, with 10 being best.

Dry film thickness measurements were obtained using a Positector 6000 FN3 Type II gauge in general accordance with ASTM D7091, “Standard Practice for Nondestructive Measurement of

Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non- Ferrous Metals.

5.3 Results of the Field Assessment

The coated substrates at the Truckee Tahoe Airport include steel, galvanized steel, aluminum, concrete and wood. Coating condition varies from location to location and, in some cases, from substrate to substrate, within the same structure. A description of the coating condition on each of the substrates on each of the structures is provided below.

Hangar 1 (Building 1)

Hangar 1 is sheathed in corrugated siding that has been painted numerous times (Figure 5-1). There is also uncoated galvanized siding that has been installed on the north side of the building (Figure 5-2). The painted siding has good color retention, is glossy and it is free of chalk (ASTM D4214: 8). The coating is tightly adhered (ASTM D6677: 10) and ranges between 10 and 12 mils in thickness. The siding appears to have been painted since the last assessment in 2014. There is some impact damage at the base of the siding (Figure 5-3) and a few isolated coating delaminations.

Figure 5-1 shows a general view of Hangar 1.

Two of the doors are finished with a factory applied coating and are free of rust. The coating is moderately chalked (ASTM D4214: 6) and has a dull finish. The other doors have been repainted. The coating is in good condition, free of chalk and tightly adhered to the substrate. The coating thickness ranges between 8 and 9 mils. The wooden carport components are heavily cracked. The coating has delaminated from the rafter tails but is in place on the other wooden components.

Figure 5-2 shows the unpainted galvanized steel siding. Also note the coating delaminations on the trim at the right of the photo.

Figure 5-3 shows an example of the impact damage at the base of the siding and the associated coating delaminations

Figure 5-4 shows the general condition of the doors that have not been recently painted.

Administration Building (Building 2)

Figure 5-5 shows a general view of the Truckee Tahoe Airport Administration Building.

The coated surfaces on the Administration Building (Figure 5-5) include factory coated siding, structural steel, galvanized decking and wood members.

The stained wood and factory coated siding is in excellent condition. The factory finish runs around 2 mils thick.

The structural steel comprising the exterior stairway is beginning to show signs of rust. There is rust staining emanating from crevices that are part of the structure (Figure 5-6). There is also edge rusting along the structural member edges. Finally, there is spot rust on the webs and other surfaces of the structural members and in areas where water puddles (Photos 7 and 8).

When evaluated in accordance with SSPC VIS2, the rusting is consistent with a rust grade 9S (less than 0.03% of the surface). The coating is glossy and free of chalk (ASTM D4214: 8). The coating thickness ranged between 5 and 9 mils.

When the coating was removed to examine the substrate, there was no evidence of abrasive blast cleaning and rust and mill scale was present (Figure 5-9).

The galvanized steel decking is in good condition (Figure 5-10). The spangle is still visible in most locations.

Figure 5-6 shows the rust and rust staining that is present on the stairway structure.

Figure 5-7 shows some minor spot rusting on the structural members.

Figure 5-8 shows rusting at the base of the railing posts where water puddles.

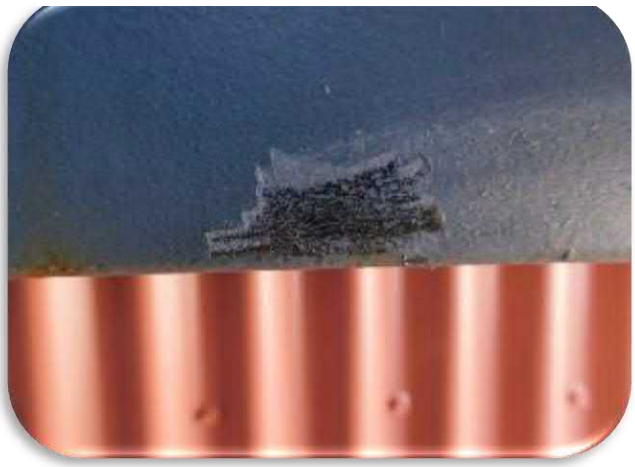

Figure 5-9 shows the substrate containing rust and mill scale.

Figure 5-10 shows a general view of the galvanized steel decking.

The coatings applied to the stairway railings is heavily delaminated exposing an underlying coating (Figure 5-11). Adhesion testing conducted on the full coating system that remained The railing that runs around the second floor observation deck is constructed of painted steel posts with stainless steel wire running through the posts. The wire is in contact with the posts and corrosion staining is visible emanating from the holes in the post. There are no washers present in the holes (Figure 5-12).

Figure 5-11 shows an example of the extensive coating delaminations and rusting that is occurring on the stairway handrails.

The coating applied to the personnel doors is faded, heavily chalked (ASTM D4214: 4), tightly adhered to the substrate (ASTM D6677: 10) and ranges between 3 and 4 mils in thickness (Figure 5-13).

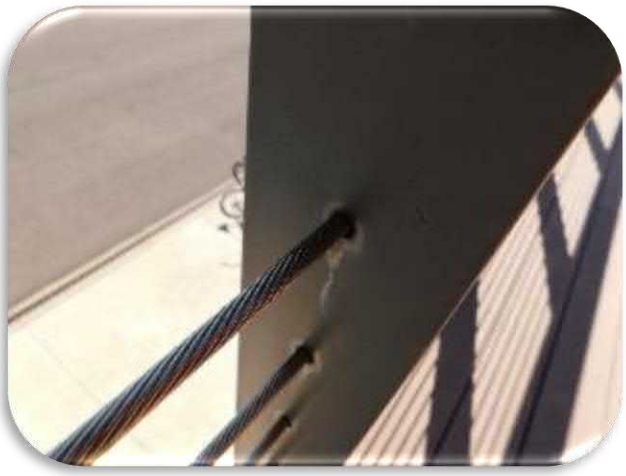

Figure 5-12 shows the mid corrosion that is occurring in the second floor railing post holes.

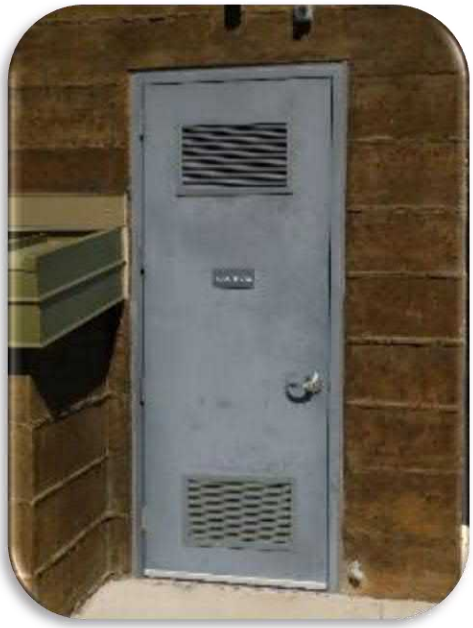

Figure 5-13 shows an example of the utility doors with faded and chalked coating.

Generator Building (Building 3)

The Generator Building (Figure 5-14) is constructed of corrugated siding. The coating is glossy and free of chalk (ASTM D4214: 8). Except for a small area of delaminated coating (around the far corner from the entrance) there are no coating defects or rust (Figure 5-15). Coating adhesion is good (ASTM D6677: 8) and the thickness ranges between 7 and 11 mils.

Figure 5-14 shows a general view of the generator building.

Figure 5-15 shows the small area of coating delaminations on the south side of the building.

Generator Building Shed (Building 3)

The original factory finished siding and trim is faded and moderately chalked (ASTM D4214: 6). However, there are no coating delamination or other coating defects (Figure 5-16).

Figure 5-16 shows a general view of the generator building shed.

Self-Serve Tank (Building 5)

The self-serve tank (Figure 5-17) consists of a horizontal tank with a shed attached to the front of the tank. There are several large intercoat delaminations on both sides of the tank (Figure 5-18). Coating adhesion is poor in those areas (ASTM D6677: 2). However, adhesion is good on the remainder of the tank surfaces (ASTM D6677: 10). The topcoat is glossy and chalk free (ASTM D4214: 8). The coating thickness ranges between 10.5 and 11.4 mils.

Figure 5-17 shows a general view of the self-serve tank.

Figure 5-18 shows the delaminations that are present on both sides of the tank.

The pump enclosures (Figure 5-19) have edge rust and the coating is heavily chalked (ASTM D4214: 2). The roll-up door and electrical box (Photos 20 and 21) has numerous coating delaminations and coating adhesion is poor (ASTM D6677: 2).

Figure 5-19 shows a general view of the pump enclosure that has edge rusting.

Figure 5-20 shows the delaminations that are present on the roll-up door.

Figure 5-21 shows the delaminations on the electrical box.

WOB (Building 6)

The WOB (Figure 5-22) is constructed similar to the Administration Building including factory coated siding, structural steel, galvanized decking and wood members (including Glu-Lam Beams). The wood surfaces and Glu-Lam are generally under cover, but the ends of the Glu-Lam beams and wood columns are exposed to wind driven rain and snow. Since the building is of relatively new construction, the stained wood surfaces are in good condition (Figure 5-23).

Figure 5-22 shows a general view of the WOB

Figure 5-23 shows an example of the condition of the wood surfaces.

No destructive testing was performed on the coated steel surfaces since the building is new construction. However, there was one coating holiday (missed spot) next to the south entrance. Markings applied to the structural steel after fabrication were visible through the coating. The thickness of the coating applied to the structural steel ranged between 4 and 5mils (Figure 5-24).

Figure 5-24 shows a structural member with the markings visible through the coating.

Maintenance Building and Adjacent Sheds (Building 7)

The maintenance building was painted in the summer of 2019, except for the garage doors. The adjacent shed siding appears to have the original factory finish (Figures 5-25 and 5-26). The siding (maintenance building and adjacent sheds) and doors are free of rust and chalk (ASTM D4214: 2) and the coating is tightly adhered to the substrate (ASTM D6677: 10). The siding on the maintenance building has faded and lost gloss (Figure 5-27). The siding on the adjacent sheds was glossy and not faded at the time of inspection (Figure 5-28). The adjacent sheds have since been painted. The trim coating is free of rust and also has good coating adhesion (ASTM D6677: 10) but is heavily chalked (ASTM D4214: 2). The trim also has impact damage. The coating thickness on the siding and trim ranges from 2 to 4 mils. The door coating thickness ranges between 9 and 10 mils and appears to have been repainted since the last assessment in 2013.

Figure 5-25 a general view of the maintenance facility

Figure 5-26 shows a general view of the sheds located adjacent to the maintenance facility.

Figure 5-27 shows the faded siding and trim on the maintenance facility. Also note the impact damage on the trim.

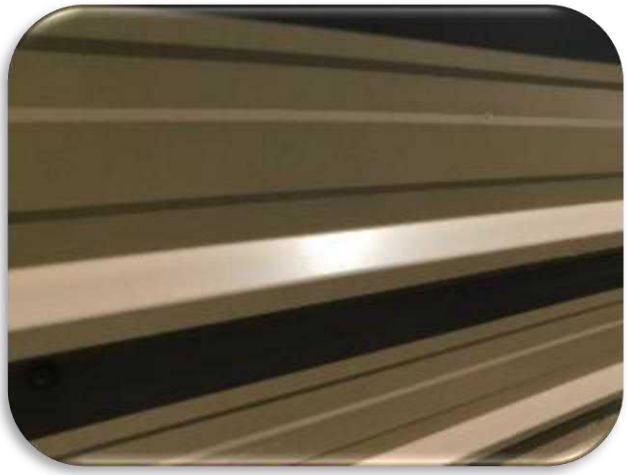

Figure 5-28 shows the glossy appearance of the siding on the sheds.

Garage (Building 8)

The garage is constructed of factory coated corrugated metal siding and roll-up doors (Figure 5-29). The coating is in good condition with no delaminations.

The coating on both the siding and roll-up doors is glossy (Figure 5-30), tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8).

Figure 5-29 shows a general view of the garage.

Figure 5-30 shows the appearance of the siding. Note that it is glossy and free of coating defects.

West Side Modular (Building 9)

The West Side Modular is a wooden structure consisting of T-111 siding with wooden trim, decking and railings (Figure 5-31). The siding is splintered at base of the building. Coating delaminations are present on the siding and trim (Figure 5-32). The railing and porch floorboards are heavily cracked, and the stain is heavily worn (Figure 5-33). The stain or coating applied to all surfaces is not chalky (ASTM D4214: better than 8).

Figure 5-31 shows a general view of the West Side Modular.

Figure 5-32 shows the condition of the T-111 siding. Note the coating delaminations and cracked wood.

Figure 5-33 shows the general condition of the wood decking and railings.

Fuel Farm (Building 10)

A number of different components are included in the Fuel Farm located at the northwest end of the airport property (Figure 5-34). The components include an overhead structure, four fuel tanks, associated piping and equipment, stairways and walkways leading up to and across the tops of the tanks, two concrete tanks, two pumping stations, and a guard shack.

Figure 5-34 shows a general view of the Fuel Farm.

There is significant edge and pinpoint rusting on the roof rafters and diagonals that support the roof (Figure 5-35). A comparison of the current condition to what was reported in 2013 indicates a significant increase in corrosion. Nevertheless, there does not appear to be significant section loss at this time.

The structural steel (columns and main structural members) has pinpoint rusting penetrating the coating. In addition, there is some isolated spot rusting (Figure 5-36). When evaluated in accordance with SSPC VIS-2, rust grades of 6-S and 6-P were observed. These grades represent approximately 1% of the surface that is rusted.

Similar to the roof rafters, the condition of the structural steel has significantly worsened since the 2013 assessment. When the coating was forcibly disbonded, the underlying surface appears free of rust and mill scale but there is little evidence of surface abrasion (abrasive blasting).

The coatings applied to the structural steel is thin, ranging from around 1.0 mil to 2.8 mils. Four adhesion tests all resulted in excellent adhesion (ASTM D6677: 10).

Figure 5-35 shows a general view of the roof rafters that support the roof structure. Note the edge and pinpoint rusting on the rafters.

The seismic rods that run between the columns are covered in rust (SSPC VIS-2: 1G) (Figure 5-37). While there was some coating present during the 2013 inspection, most has delaminated as a result of the rusting.

Figure 5-36 shows an example of the typical condition of the seismic rods that are covered in rust.

The three Jet A Fuel Storage Tanks 1 through 3 (Figure 5-38) have coating delaminations that are primarily found on the back end of the tank (Figure 5-39), although in one instance, degraded coatings appear to have resulted from spillage directly beneath the tank fill port on the top of the tank (Figure 5-40). Overall less than 10% of the surface is affected. When the coating is forcibly disbonded, the substrate is covered in mill scale. The coating has moderate adhesion to the substrate (ASTM D6677: 6) and is heavily chalked (ASTM D4212: 2). The coatings applied to the tanks range between 7 and 8 mils in thickness. The substrate was not abrasive blast cleaned and contains rust and mill scale. The condition of the exterior tank coatings is similar to that observed during the 2013 assessment.

Figure 5-37 shows an example of the pinpoint rusting that was present on the structural steel.

Figure 5-38 shows a general view of the three Jet A Fuel Storage Tanks. Note the general absence of rust on the visible surfaces.

Figure 5-39 shows the condition on the back ends of the tanks. Note the numerous delaminations.

Figure 5-40 shows the coating degradation that was observed directly beneath the fill ports.

The stairways (grating, handrails, stringers and support structure) have patches of pinpoint rust and impact damage (Figures 5-41 and 5-42). The coating is heavily chalked (ASTM D4214: 2) and has moderate adhesion to the substrate (ASTM D6677: 6). The amount of rusting has increased since the 2013 assessment from approximately 1% of the surface to 10% of the surface.

Figure 5-41 shows the general condition of the stairway support structure and grating.

Figure 5-42 shows the typical condition of the stairway handrails.

The main pumping station has coating delaminations and areas of worn coating (Figures 5-43 through 5-45). Rust is present where the substrate is exposed. When evaluated in accordance with SSPC VIS2, the condition is consistent with a rust rating of 7S (approximately 0.3% of the surface) Oil and grease are present on the painted surfaces.

Figure 5-43 shows a general view of some of the painted surfaces on the pumping station.

Figure 5-44 shows a view of the far end of the equipment skid with rust and impact damage.

Figure 5-45 shows the typical degree of impact damage and rust on the pumping station surfaces.

Figure 5-46 shows a general view of the diesel fuel storage tank. The coatings applied to this tank are in good condition.

The coating thickness ranges from 4 to 7 mils, is mildly chalked (ASTM D4214: 6) and tightly adhered to the substrate (ASTM D6677: 10).

The coatings applied to the diesel tank is in better condition with no rust, delamination or other defects. The coating thickness ranges from 7 to 8 mils, is heavily chalked (ASTM D4214: 2), and tightly adhered to the substrate (ASTM D6677: 10).

The coating applied to the Mogas concrete tank is in good condition with no visible coating defects (Figure 5-47). The coating is heavily chalked (ASTM D4214: 2) and poorly adhered to the substrate (ASTM D6677: 4).

The coating applied to the concrete waste tank is in good condition with no visible coating defects (Figure 5-48). The coating is only mildly chalked (ASTM D4214: 6) and is tightly adhered to the substrate (ASTM D6677: 10).

Figure 5-47 shows a general view of the Mogas concrete tank. The coating applied to this tank is free of coating defects.

Figure 5-48 shows a general view of the concrete waste tank

Warehouse (Building 11)

The building is sheathed in corrugated metal siding and has a few delaminations, usually at impact points at base of building (mostly on the north side). The siding coating has faded and is blotchy in some areas but glossy in others (Figures 5-49 through 5-51). The doors have impact damage and minor spot rust. The coating on the doors is glossy (Figures 5-52 and 5-53). All of the coating is tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The dry film thickness ranges between 6 and 8 mils. The gray entranceways have edge rust. The coating is flat and faded (Figure 5-53).

Figure 5-49 shows an example of the condition of the coating on the doors (bright and glossy). Note, however, that the adjacent siding is faded and flat.

Figure 5-50 shows a general view of the warehouse.

Figure 5-51 shows an example of the impact damage that was observed with the associated coating delaminations

Figure 5-52 shows an example of a gloss area.

Figure 5-53 shows a general view of the steel entrance ways. The edges of these structures are rusted.

Phoenix Hangar (Building 12)

Another corrugated sided structure, the Phoenix Hangar (Figure 5-54) coatings are in good condition with no evidence of rust, delamination or chalking (ASTM D4214: 8). The coating appears to have faded a bit, but it is tightly adhered to the substrate (ASTM D6677: 10) and free of chalk. The coating thickness ranges between 2 and 4 mils. There is impact damage to the siding, but the coating is undisturbed (Figure 5-55). There is a textured aluminum door with an original factory finish that has been repainted. The coating is glossy and free of chalk (ASTM D4214: 8) but is poorly adhered to the substrate (ASTM D6677: 2). The coating thickness ranges between 5and 7 mils. There are a few scrapes at the base of the door. Coating adhesion is excellent.

Figure 5-54 shows a general view of the Phoenix.

Figure 5-55 shows an example of the impact damage that was present on the hangar surfaces.

EAA (Building 13)

The EAA Building (Figure 5-56) is primarily faced with T-111 siding. The rear of the building has plywood applied to the façade. There is rough-hewn wood trim around windows and doors. There is one area with aluminum siding, one roll-up garage door and several composite personnel doors. In addition, there is some exterior piping.

Figure 5-56 shows a general view of the EAA Building.

The wood siding and trim has been scraped and over coated at some time in the past. There are islands of thick paint that are lifting and delaminating. The wood substrate is cracked (Figures 5-57 and 5-58). The aluminum siding is heavily damaged. All of the wood substrates are cracked and degraded. Adhesion tests (Figure 5-59) conducted on the wood surfaces indicated poor coating adhesion (ASTM D6677: 0).

Figure 5-57 shows the typical condition of the wood siding. Note the cracked and lifting paint.

Figure 5-58 shows the typical condition of the siding with lifting paint.

The coating applied to the roll-up door and the composite doors is in good condition with no delaminations or other defects.

The piping has coating delaminations and rust on the surface (Figure 5-60).

Figure 5-59 shows the results of an adhesion test indicating poor adhesion.

Figure 5-60 shows the condition of the piping associated with the EAA Building.

Air Traffic Control Tower (Building 14)

The Air Traffic Control Tower is constructed of several stacked shipping containers with a structural steel frame supporting the tower. There is also an exterior steel stairway (Figure 5-61).

Figure 5-61 shows a general view of the Air Traffic Control Tower.

Pinpoint rusting is present in a few locations on the container structure and the stairway. The rusting is found on rough welds on the containers (Figure 5-62) and at spots of thin coating and coating holidays on the stairway (Figure 5-63).

When the coating was removed to examine the substrate, the steel appeared abrasive blast cleaned. Coating adhesion on the structure is excellent (ASTM D6677: 10) and moderate on the stairway (ASTM D6677: 6). The coating is glossy and chalk free on both structures (ASTM D4214: 8). The coating dry film thickness ranged between 25 and 28 mils on the tower structure and 17 to 20 mils on the stairway.

Figure 5-62 shows an example of the rusting that was observed on the Air Traffic Control Tower stairway.

Figure 5-63 shows the typical corrosion on the Air Traffic Control Tower.

Hangars A, B and F Through H

The coating applied to the siding on these hangars is in good condition (Figure 5-64). The coating is glossy, tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The coating thickness ranges between 4 and 10 mils with most of the readings between 4 and 7 mils. There are a few small coating delaminations on Hangar B (Figure 5-65).

These hangars were repainted since the 2013 assessment and the coating is performing well.

The doors (Figure 5-66) are in similar condition to the siding and are free of coating defects and rust. The coating is glossy, tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The coating thickness ranges between 2 and 3 mils.

Figure 5-64 shows an example of the condition of the recently painted siding on Hangars A, B and F through H.

Figure 5-65 shows an example of the infrequent coating delaminations on Hangar B.

Figure 5-66 shows an example of the condition of the doors on these hangars.

Hangar C

The coating applied to the siding on Hangar C is aged and has lost its gloss. There are a few small delaminations scattered across the building (Figure 5-67). There are also areas where the coating has worn off and the aluminum substrate is clearly visible (Figure 5-68). The coating is tightly adhered to the substrate (ASTM D6677: 10) and moderately chalked (ASTM D4214: 4). The coating thickness ranges between 2 and 4 mils. The doors are in similar condition to the siding and are free of coating defects and rust.

Figure 5-67 shows an example of one of the infrequent delaminations on Hangar C.

Figure 5-68 shows an example of an areas where the coating has worn away exposing the galvanized substrate.

Hangar D

The coating applied to the siding on Hangar D is also aged and has lost its gloss. There are a few small delaminations scattered across the building many of which are associated with impact damage (Figures 5-69 and 5-70). Others are associated with deflated blisters. There are also areas where the coating has delaminated from the galvanized steel windowsills (Figure 5-71). Coating adhesion varies with some tests indicating excellent adhesion (ASTM D6677: 10) and equal number indicating poor (Figure 5-72) coating adhesion (ASTM D6677: 2). The coating is moderately chalked (ASTM D4214: 4). The coating thickness ranges between 3 and 5 mils. The doors are in similar condition to the siding and are free of coating defects and rust.

Figure 5-69 shows one example of the blistered that were observed on the siding.

Figure 5-70 shows a delamination at an impact point.

Figure 5-71 shows the delamination on the galvanized windowsill.

Figure 5-72 shows an example of an adhesion test indicating poor coating adhesion.

Hangar E

The coating is flat and faded. There are blisters all over the siding on the east façade (Figure 5-73). There are no blisters or other coating defects on the remaining facades. Coating adhesion varies with the tests indicating excellent adhesion (ASTM D6677: 10) on the north and west facades and poor (Figure 5-74) coating adhesion (ASTM D6677: 0 and 2) on the south and east facades. The coating is moderately chalked (ASTM D4214: 4). The coating thickness ranges between 3 and 9 mils. The coating applied to the doors is in good condition, glossy and are free of coating defects and rust (Figure 5-75). However, there is a significant amount of buckling from impacts.

The electrical equipment canopy has a significant amount of impact damage and is rusty (Figure 5-76).

Figure 5-73 shows an example of the blisters that were present.

Figure 5-74 shows an example of an adhesion test indicating poor coating adhesion.

Figure 5-75 shows an example of the condition of the doors. The coating is glossy, but the door is damaged

Figure 5-76 shows the rusted and unpainted posts on the electrical equipment canopy.

Hangars J through M

The coating applied to the siding on these hangars is in good condition (Figure 5-77). The coating is glossy, tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The coating thickness on Hangars J and K ranges between 6 and 9 mils while the coating thickness on Hangars L and M ranges between 1 and 2.5 mils.

Figure 5-77 shows a general view of the coating condition on Hangars J through M. Note the freshly painted glossy appearance.

The doors are in similar condition to the siding and are free of coating defects and rust (Figure 5-78). The coating is glossy, tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The coating thickness on Hangars J and K ranges between 4 and 7 mils while the coating thickness on Hangars Land M ranges between 2 and 4 mils.

Hangars N and P

The coating applied to the siding on these hangars is in good condition (Figure 5-79) except for some blotchy discolorations on Hangar P (Figure 5-80). The coating is glossy, tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The coating thickness on Hangars N and P ranges between 0.5 and 1.5 mils.

The doors are in similar condition to the siding and are free of coating defects and rust (Figure 5-81). The coating is glossy, tightly adhered to the substrate (ASTM D6677: 10) and free of chalk (ASTM D4214: 8). The coating thickness ranges between 1 and 1.5 mils.

Figure 5-78 shows the typical condition of the doors on these hangars.

Figure 5-79 shows a general view of Hangars N and P--Not the glossy appearance of the recently applied coating system.

Figure 5-80 shows an example of the color variations on Hangar P.

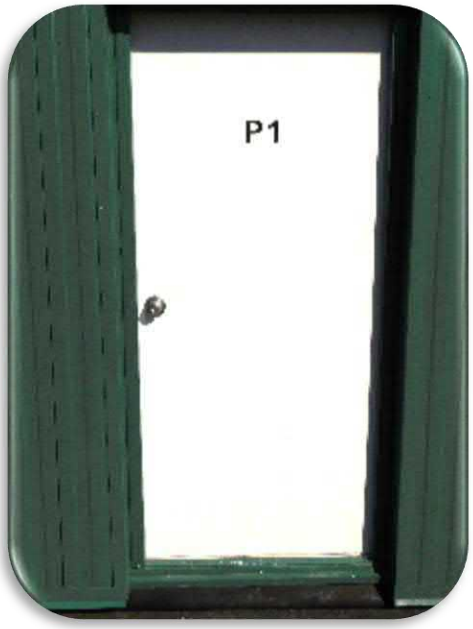

Figure 5-81 shows an example of the condition of the doors on these hangars.

5.4 Discussion

Analysis of the field assessment data indicates that there are four clear categories of coating condition at the Truckee Tahoe Airport. Each is discussed separately below.

Category 1 – Degraded Substrates

This category includes substrates that have degradation. On steel surfaces, rust is present. However, in no area examined was rusting severe. There was no evidence of section loss or excessive pitting. Some of the wood surfaces were heavily degraded. Much of the coating had delaminated or was worn away. The exposed wood was cracked and oxidized.

Category 2 – Unsightly Appearances

This category includes components that have worn coatings, delaminated coatings or faded coating. However, there is no degradation of the underlying substrate. This category also includes substrates that currently appear acceptable but because of poor coating adhesion are likely to degrade over the next five years.

Category 3 – Coatings and Substrate in Good Condition

Many of the coatings were in good condition. The surfaces retained color and gloss. There was no evidence of any coating failures, however, the coating colors were not consistent with the other structures around them or there was evidence that failures could occur at some time in the future (poor coating adhesion).

Category 4 – Recently Painted

These surfaces were recently painted, and maintenance painting is not required in the near future.

These categories were then assigned priorities with Category 1, Degraded Substrates, receiving the highest priority. The priorities identify the period in which the maintenance painting work should be completed. The priorities allow enough time to budget and plan the work and provide reasonable assurance that significant degradation will not occur until the maintenance is performed. Table 5-1 – Painting Priorities, provides a brief summary of each priority and the applicable basis.

Table 5-1. Painting Priorities

Category	Basis	Priority
1	Degraded Substrate or Significant Coating Failure	Within 2 Years
2	Unsightly or Aesthetically Displeasing	Two to Five Years
3	Substrate and Coatings in Generally Good Condition	Five to Ten Years
4	Recently Painted – Coating in Excellent Condition	Ten to Twenty Years

Table 5-3 – Maintenance Painting Recommendations, appended to the report, provides the priority for each of the structures and components that were investigated. It should be noted that since several structures may have components with differing priorities it will likely be cost effective to perform the maintenance painting of all of the surfaces at the same time. For instance, Self-Serve Tank has rust on the pump enclosure and exposed steel on the electrical box. These surfaces are recommended to be painted within the next two years. The tanks and roll-up doors have some coating delamination and do not require painting for two to five years. It would be cost effective to paint the tank and doors at the same time as the other equipment.

5.5 Maintenance Painting Recommendations

The maintenance painting work falls into four different scenarios: Spot Repair, Spot Repair (Including the Removal of Poorly Adhered Coatings) and Overcoat, Replacement of Substrates: Prime and Paint, and Removal and Replacement of Existing Coatings. Since there are different methodologies necessary for the different substrates, separate discussions are included below for each substrate.

It is anticipated that all painting operations except complete coating removal and replacement can be accomplished by either airport maintenance personnel with some assistance from a coating professional or from a commercial painter. As such, the requirements for surface preparation are described as opposed to reference to industry standards.

Substrates that require complete removal and replacement should be performed by an industrial painter since the surface preparation methodology is more complex. The surface preparation requirements include the applicable industry standards.

Over Coating Factory Finished Siding and Aluminum Doors

As is the case for all painting operations, the first step should always be cleaning of the surfaces. This process is best accomplished by pressure water washing at pressures between 5000 and 10,000 psi. At these pressures, any loose coating that is present should be removed. This is a very important step since some of the components have coatings that are adhered to the substrate in some areas but are loose in other areas. The pressure water washing should be accompanied by scrubbing with detergents and Scotch-Brite pads. The Scotch-Brite pads should degloss the surfaces and impart haze of scratches.

If there are any areas of exposed substrate, the surrounding intact tightly adhering coating should be feathered (sanded smooth). Any dust and debris that is created as a result of the sanding should be thoroughly removed.

Areas of exposed substrate should be spot primed with an epoxy primer. All surfaces (spot primed and prepared factory finishes) should then be finished with two coats of adhesion promoting acrylic formulated for application over finished metal siding.

Over Coating Previously Painted (Good Condition) Wood

Wood surfaces should be scraped and sanded. Areas of exposed substrate should be sanded to remove any oxidized (gray) wood. The surrounding intact tightly adhering coating should be feathered (sanded smooth). All glossy paint should be sanded to create a haze of scratches across the entire surface. Pressure water washing at low pressures (less than 3000 psi) can be used to remove the debris. The cleaned wood should be allowed to thoroughly dry. The exposed substrate and existing coating should be primed and finished with two coats of exterior acrylic paint or stain.

Spot Repair

This approach would be used on steel or galvanized steel surfaces with tightly adherent existing coatings and minor areas of spot rust. If the coating is repaired within a short period of time, then more extensive costly repairs will not be necessary. With this approach all oil and grease should be removed in accordance with SSPC SP-1, Solvent Cleaning. Areas of rust should be power tool cleaned with the intent of removing all loose rust. Tightly adherent rust is acceptable to remain on the surface.

Any areas of smooth unweathered galvanized steel should be treated with a phosphoric acid based etchant and thoroughly cleaned once the etching process is complete.

The edges of the surrounding coating should be feathered smooth. The prepared surfaces should be spot primed with a surface tolerant epoxy primer and finished with one coat of high performance acrylic.

Spot Repair and Over Coating Steel and Galvanized Steel Surfaces

This approach would be used on steel or galvanized steel surfaces with tightly adherent existing coatings and rusting less than 15%. All oil and grease should be removed in accordance with SSPC SP-1, Solvent Cleaning. Pressure water washing should be performed at 5,000 to 10,000 psi. Areas of rust should be power tool cleaned with the intent of removing all loose rust. Tightly adherent rust is acceptable to remain on the surface.

Any areas of smooth unweathered galvanized steel should be treated with a phosphoric acid based etchant and thoroughly cleaned once the etching process is complete.

The edges of the surrounding coating should be feathered smooth. Glossy tightly adherent coating should be sanded to create a haze of scratches across the entire surface. Exposed steel should then be over coated with an epoxy tie coat and finished with one coat of high performance acrylic.

Spot Repair and Over Coating Concrete

All oil and grease should be removed in accordance with SSPC SP-1, Solvent Cleaning. Pressure water washing should be performed at 5,000 to 10,000 psi. The coating surrounding areas of exposed concrete should be sanded smooth. Glossy tightly adherent coating should be sanded to create a haze of scratches across the entire surface.

Areas of exposed concrete should be primed with a concrete primer. All surfaces should be finished with one coat of acrylic paint.

Substrate Replacement, Priming and Finish Coating

This approach is applicable to painted wood substrates that are too degraded to successfully coat. When the wood is heavily cracked and rotted, the cracks permit moisture to penetrate into the wood. Coating delaminations result. The pores of rotted wood are sealed and so the paint can't penetrate, and the adhesion of new paint is poor. While one alternative to substrate replacement is to spackle the surfaces with a knife grade caulk, the service life of this approach is short (perhaps only one year).

New wood surfaces should be pressure water washed to remove all contaminants (grease, oil, dirt, dust, etc.) and allowed to dry. Any areas of damaged wood should be sanded smooth; however, it is not the intent to sand rough-hewn wood.

The prepared surfaces should be primed with an oil-based primer and then over coated with two coats of exterior acrylic paint or stain.

Removal and Replacement of Existing Coating System

This approach is applicable for structures / components that are significantly rusted, have mill scale on the substrate (which is likely to disbond if not removed) or have coatings that are poorly adhered. These components are not candidates for over coating. If removal and replacement is not performed, the component will require continued and frequent painting.

All surfaces should be cleaned by pressure water washing at pressures between 5,000 and 10,000 psi. All oil and grease should be removed in accordance with SSPC SP-1, Solvent Cleaning. This standard permits the use of solvents and detergents for oil, grease and dirt removal.

At the completion of the cleaning operations, the existing coating should be removed, and the surfaces prepared by abrasive blasting in accordance with SSPC SP-6, Commercial Blast Cleaning.

As an option, Commercial Grade Power Tool Cleaning, SSPC SP-15, can be used on components where abrasive blasting may be difficult. SSPC SP-15 is the power tool cleaning equivalent to

Commercial Blast Cleaning. The standard includes both a cleanliness requirement and a profile standard.

The prepared surfaces should be primed with an organic zinc rich primer and then coated with an epoxy intermediate coat and a polyurethane finish coat.

Table 5-2. Coatings Field Assessment

Facility Number	Facility Name	Component	Visual Description	Adhesion	Dry Film Thickness Spot Reading (mils)	Chalk Assessment
1	Hangar 1	Painted Siding	No Failures	One Test: 10	10.0 to 12.0	Better than 8
		Unpainted Galvanized Steel Siding	No Failures or Rust	Not Performed	Not Performed	Not Performed
		Steel Doors - Older Coating	No Failures	Not Performed	Not Performed	6
		Steel Doors - Recently Painted	No Failures	One Test: 10	8.0 to 9.0	Better than 8
		Wood	No Failures. Rafter Tails and Plywood - Cracked	Not Performed	Not Performed	Not Performed
2	Administration Building	Structural Steel	Rust Staining from Uncaulked Crevices. Some Edge and Spot Rusting. Substrate Contains Rust and Mill Scale.	Structural Members Two Tests: 10	Structural Members 5.0 to 9.0	Better than 8
		Stained Wood Surfaces	No Defects. Good Condition.	Not Performed	Not Performed	Better than 8
		Siding	No Defects	Not Performed	2	Better than 8
		Doors	Minor Impact Damage. Heavily Faded	One Test: 10	3.5 to 4.2	4
3	Generator Building	Siding	Small Area with Coating Delaminations on West Wall. No Other Failures, But Faded	Two Tests: 10	7.0 to 11.0	8
3	Generator Building Shed	Siding and Trim	No Failures. Heavily Faded Paint.	Not Performed	2	4 to 6
5	Self-Serve Tank	Steel Tank	A Few Large Intercoat Delaminations on Both Sides of Tank	Delaminated Area One Test: 2 Other Surfaces Five Tests: 10	11 to 12	Better than 8
		Shed	No Failures	One Test: 10	Not Performed	Better than 8
		Roll-Up Door	Numerous Delaminations	One Test: 2	Not Performed	Not Performed
		Pump Enclosures	Edge Rust	Not Performed	Not Performed	2
		Electrical Box	Numerous Intercoat Delaminations	One Test: 2	Not Performed	4

Facility Number	Facility Name	Component	Visual Description	Adhesion	Dry Film Thickness Spot Reading (mils)	Chalk Assessment
6	WOB	Siding	No Failures	Not Performed	2	Better than 8
		Structural Steel	No Failures. Steel Markings Visible Through Paint.	Not Performed	4.0 to 4.5	Not Performed
		Wood	Stain is in Good Condition	Not Performed	Not Performed	Not Performed
7	Maintenance Building and Adjacent Sheds	Maintenance Building - Siding	No Failures. Original Factory Finish.	One Test: 10	2.0 to 3.0	8
		Maintenance Building - Trim	Some Impact Damage	One Test: 10	3.0 to 4.0	2
		Maintenance Building - Doors	No Failures	One Test: 10	9.0 to 10.0	8
		Sheds	No Failures	Not Performed	2	Better than 8
8	Garage	Siding and Doors	No Coating Failures	Two Tests: 10	Not Performed	Better than 8
9	West Side Modular	T-111 Siding, Rough Hewn Trim, Wood Decking and Railing	Siding is Splintered at Base. Delaminations on Siding Trim. Railing and Porch Floor Boards Are Heavily Cracked and Worn.	Not Performed	Not Performed	Better than 8
10	Fuel Farm	Structural Members	Edge Rusting, minor areas of pinpoint and spot rust. No section loss. Rust is superficial. Substrate Is Free of Rust and Mill Scale	Four Tests: 10	1.0 to 2.8	Better than 8
		Roof Rafters	Pinpoint Rust Covering Approximately 30% of Surface	Not Performed	Not Performed	Not Performed
		Seismic Rods	Completely Rusted	Not Performed	Not Performed	Not Performed
		Jet A Tanks	Less than 10% of the coating has delaminated (primarily on the back ends).	Two Tests: 6	7.0 to 8.0	2
		Diesel Tank	No Failures	One Test: 10	7.0 to 8.0	2

Facility Number	Facility Name	Component	Visual Description	Adhesion	Dry Film Thickness Spot Reading (mils)	Chalk Assessment
		Pump Station	Coating delaminations from Impact Damage and worn coating. Oil and grease.	Two Tests: 10	4.0 to 7.0	6
		Mogas Concrete Tank	No Failures	One Test: 4	Not Performed	2
		Stairways and Tank Access Walkways	Rust coating delaminations and worn spots.	One Test: 6	Not Performed	2
		Concrete Waste	No Failures. Oil and Grease.	One Test: 10	Not Performed	6
11	Warehouse	Siding	A Few Delaminations and Impact Damage at Base of Building on North Side	One Test: 10 Two Tests: 8	6.0 to 8.0	8
		Entrance Enclosures	Edge Rust	One Test: 10	7.0 to 8.0	4
		Doors and Frames	Impact Damage with Rust	One Test: 6	7.0 to 8.0	8
12	Phoenix Hangar	Siding	No Failures	One Test: 10	2.0 to 4.0	Better than 8
		Door	A Few Scrapes	One Test: 2	5.0 to 7.0	Better than 8
13	EAA	T-111 Siding and Plywood	Poor Condition: Cracked with Numerous Delaminations	Two Tests: 0	Not Performed	Not Performed
		Rough Hewn Wood Trim	Poor Condition: Cracked with Numerous Delaminations.	One Test: 0	Not Performed	Not Performed
		Roll-up Door	No Failures: Factory Finish	Not Performed	Not Performed	Better than 8
		Composite Personnel Door	No Failures	Not Performed	Not Performed	Not Performed
		Aluminum Siding	Damaged	Not Performed	Not Performed	Not Performed
		Steel Piping	Lifted Coating and Minor Rusting	Not Performed	Not Performed	Not Performed
14	Air Traffic Control Tower	Steel Structure	Only Minor Rusting at Rough Welds. Substrate Abrasive Blast Cleaned	One: 10	25 to 28	Better than 8

Facility Number	Facility Name	Component	Visual Description	Adhesion	Dry Film Thickness Spot Reading (mils)	Chalk Assessment
		Stairway	Pinpoint Rusting at Coating Holidays and Thin Spots. Substrate Abrasive Blast Cleaned	One: 6	17 to 20	Better than 8
A	Hangar A	Siding	No Failures	Two Tests: 10	5.0 to 10.0	Better than 8
		Doors	No Failures	Not Performed	Not Performed	Better than 8
B	Hangar B	Siding	A Few Small Delaminations	East Side One Test: 10 North Side One Test: 10 South Side One Test: 10 West Side One Test: 10	East Side 4.0 to 7.0 North Side 5.0 to 6.0 South Side 4.0 to 6.0 West Side 4.0 to 6.0	Better than 8
		Doors	No Failures: Glossy Factory Finish	Two Tests: 10	Not Performed	Better than 8
		Wood Wainscot	Oxidized. Mild Cracking	Not Performed	Not Performed	Not Performed
C	Hangar C	Siding	A Few Small Coating Delaminations and Thin Spots	East Side Two Tests: 10 North Side Two Tests: 10 South Side One Test: 10 West Side One Test: 10	East Side 2.0 to 3.0 North Side 3.0 to 4.0 South Side 3.0 to 4.0 West Side 3.0 to 4.0	4
		Doors	No Failures	Two Tests: 10	Not Performed	4

Facility Number	Facility Name	Component	Visual Description	Adhesion	Dry Film Thickness Spot Reading (mils)	Chalk Assessment
D	Hangar D	Siding	A Few Delaminations / Blisters on East and North Side	East Side Two Tests: 2 One Test: 10 North Side One Test: 2 South Side One Test: 2 West Side Two Tests: 10	East Side 3.0 to 4.0 North Side 3.0 to 5.0 South Side 3.0 to 4.0 West Side 3.0 to 5.0	Better than 8
		Doors / Trim	No Failures on Doors. Coating Delaminations to Galvanized Steel on Window Flashing	Two Tests: 0	5.2 to 5.6	Better than 8
E	Hangar E	Siding	Blisters All Over East Side. No Blisters on North and West Side	East Side Three Tests: 2 North / West Two Tests: 10 South Side One Test: 0	East Side 7.0 to 8.0 North Side 3.0 to 6.0 South Side 8.0 to 9.0	4
		Aluminum Doors	No Failures	Two Tests: 10	Not Performed	Better than 8
		Electrical Enclosure	Large Scrapes on Post. Unpainted and Rusted Posts	Not Performed	Not Performed	Not Performed
F	Hangar F	Siding	No Failures: Glossy Paint	Two Tests: 10	5.0 to 6.0	Better than 8
		Aluminum Doors	No Failures: Glossy Paint	One Test: 10	5.0 to 7.0	Better than 8
G	Hangar G	Siding	No Failures. Glossy Paint	Not Performed	5.0 to 6.0	Better than 8
		Aluminum Doors	No Failures. Glossy Paint	Not Performed	2.0 to 3.0	Better than 8
H	Hangar H	Siding	No Failures. Glossy Paint	Two Tests: 10	5.0 to 6.0	Better than 8
		Aluminum Doors	No Failures. Glossy Paint	One Test: 10	2.0 to 3.0	Better than 8
J	Hangar J	Siding	No Failures	One Test: 10	7.0 to 9.0	Better than 8
		Doors	No Failures	One Test: 10	4.0 to 6.0	Better than 8

Facility Number	Facility Name	Component	Visual Description	Adhesion	Dry Film Thickness Spot Reading (mils)	Chalk Assessment
K	Hangar K	Siding	No Failures	One Test: 10	6.0 to 9.0	Better than 8
		Doors	Minor Impact Damage	One Test: 10	6.0 to 7.0	Better than 8
L	Hangar L	Siding	No Failures	One Test: 10	1.0 to 1.5	Better than 8
		Doors	Minor Impact Damage	One Test: 10	3.5	Better than 8
M	Hangar M	Siding	No Failures	One Test: 10	2.0 to 2.5	Better than 8
		Doors	No Failures	One Test: 10	2.0 to 4.0	Better than 8
N & P	Hangars N and P	Siding	No Failures Except for Discolorations on Hangar P	One Test: 10	0.5 to 1.5	Better than 8
		Doors	No Failures	One Test: 10	1.0 to 1.5	Better than 8

Table 5-3. Maintenance Painting Recommendations

Facility Number	Facility Name	Component	Priority	Recommendations
1	Hangar 1	Painted Siding and Trim	4	No Action Required
		Unpainted Galvanized Steel Siding	2	Spot Repair and Overcoat - Galvanized Steel
		Steel Doors - Recently Painted	4	No Action Required
		Steel Doors - Older Coating	2	Spot Repair and Overcoat - Steel
		Wood Surfaces	2	Spot Repair and Overcoat - Wood
2	Administration Building	Steel Stairways, Balconies, Structural Steel	2	Spot Repair and Overcoat - Steel or Remove and Replace
		Stain Wood Surfaces	4	No Action Required
		Siding	4	No Action Required
		Doors	2	Spot Repair and Overcoat
3	Generator Building	Siding	3	Spot Repair and Overcoat - Steel
3	Generator Building Shed	Siding	3	Spot Repair and Overcoat - Siding and Doors
5	Self-Serve Tank	Steel Tank	2	Spot Repair and Overcoat - Steel
		Shed	3	No Action Required
		Roll-Up Door	2	Spot Repair and Overcoat - Steel
		Pump Enclosures	1	Spot Repair and Overcoat - Steel
		Electrical Box	1	Spot Repair and Overcoat - Steel
6	WOB	Siding	4	No Action Required
		Structural Steel	4	No Action Required
		Wood	4	No Action Required
		Doors	4	No Action Required
7	Maintenance Building and Adjacent Sheds	Siding	3	Spot Repair and Overcoat - Siding and Doors
		Roll-up Doors	3	Spot Repair and Overcoat - Siding and Doors
		Personnel Doors	4	No Action Required
8	Garage	Siding and Doors - Original Paint	3	Spot Repair and Overcoat - Siding and Doors
9	West Side Modular	Most T-111 Siding, Rough Hewn Trim and Decking	3	Spot Repair and Overcoat - Wood
		T-111 Siding at Base and Hand Rails	1	Replace, Prime and Paint

Facility Number	Facility Name	Component	Priority	Recommendations
10	Fuel Farm	Structural Members and Roof Rafters	1	Remove and Replace
		Seismic Rods	1	Remove and Replace
		Tank 1	2	Remove and Replace
		Tank 2	2	Remove and Replace
		Tank 3	2	Remove and Replace
		Diesel Tank	2	Remove and Replace
		Pump Station	2	Spot Repair and Overcoat - Steel
		Stairways and Tank Access Walkways	1	Remove and Replace
		Concrete Tanks	3	Spot Repair and Overcoat - Concrete
11	Warehouse	Siding	3	Spot Repair and Overcoat - Siding and Doors
		Entrance Enclosures	1	Spot Repair and Overcoat - Steel
		Doors and Frames	3	Spot Repair and Overcoat - Siding and Doors
12	Phoenix Hangar	Siding	3	Spot Repair and Overcoat - Siding and Doors
		Aluminum Door	3	Spot Repair and Overcoat - Siding and Doors
12	EAA	Wood Siding	1	Replace Heavily Cracked Siding Prime and Paint Spot Repair and Overcoat - Wood
		Wood Trim	1	Spot Repair and Overcoat - Wood
		Roll-up Door	3	Spot Repair and Overcoat - Siding and Doors
		Fiberglass Personnel Door	3	Spot Repair and Overcoat - Siding and Doors
		Piping	1	Remove and Replace
13	Air Traffic Control Tower	Steel Surfaces	1	Spot Repair - Steel
A, B, & F-H	Hangars A, B and F through H	Siding	4	No Action Required
		Textured Aluminum Doors	4	No Action Required
C	Hangar C	Siding - Original Paint	3	Spot Repair and Overcoat - Siding and Doors
		Textured Aluminum Doors	3	Spot Repair and Overcoat - Siding and Doors
D	Hangar D	Siding - Repainted	3	Spot Repair and Overcoat - Siding and Doors
		Aluminum Doors	3	Spot Repair and Overcoat - Siding and Doors

Facility Number	Facility Name	Component	Priority	Recommendations
E	Hangar E	Siding	2	Spot Repair and Overcoat - Siding and Doors
		Aluminum Doors	4	No Action Required
		Electrical Equipment Canopy	2	Spot Repair and Overcoat - Steel
J & K	Hangars J and K	Siding	4	No Action Required
		Aluminum Doors	4	No Action Required
L & M	Hangars L and M	Siding	3	Spot Repair and Overcoat - Siding and Doors
		Doors	3	Spot Repair and Overcoat - Siding and Doors
N & P	Hangars N and P	Siding	4	No Action Required
		Doors	4	No Action Required

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6.0 Mechanical

Prosser Building and Development has conducted a thorough investigation of the mechanical systems at the Truckee Tahoe Airport. The units that were observed are for space heating and cooling, water heating, ventilation and exhaust. Table 6-1 details each unit sorted by building. Recommended maintenance and replacement costs and timeframes are given. Costs are listed per year for the next 10 years. Costs are given in 2019 dollars. This report does not intend for forecast inflation or construction cost escalation.

The recommendations do not include system design. It was assumed that the existing equipment is adequately sized and is providing adequate heating, ventilation or air conditioning. Licensed engineers and contractors should be used to confirm suitability and size, and install proposed equipment per codes and industry standards. Retaining a California Mechanical Engineer is recommended to optimize energy efficiency and comfort, based on actual facility use at the time of unit replacement.

Items listed for 2020 should be addressed as soon as possible because of code deficiencies, hazards, or likely early failure.

The recommendations assume it is better to plan for replacement of the units so unexpected failure (with associated elevated costs and temporary heating) can be avoided. Some units may last longer than expected. It is recommended that TTAD evaluate their risk tolerance with respect to sudden failure of a unit.

In addition to the listed maintenance, other routine maintenance is required. This report does attempt to describe every routine maintenance activity. For example, all water heater temperature and pressure relief valves should be tested annually. It is recommended that, at a minimum, every piece of equipment be annually inspected by a qualified professional.

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Table 6-1. Mechanical Assessment

Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
Maintenance Building																			
	Water Heater	1	Bradford White	MI504S6LN10	Natural Gas	50,000 BTU	40,000 BTU	80%	50 Gallons	1997	yes although wall screws may not be sufficient	seems tight	Auto/ Water temp	yes	Drain pan, PTRV, no Insulating blanket	2020 with a condensing water heater, could be an instantaneous so that the room doesn't heat up where electronics are.	$2,500	Inspect Yearly	$100
	Furnace	1	Carrier	58RAV095-12	Natural Gas	92,000 BTU	74,000 BTU	80%		1997	Duct is hung, not braced although this probably is sufficient	seems tight, Needs lateral bracing	Honeywell Programable Thermostat	Yes	Filter needs to be changed, duct work should be cleaned Both outside air vents need to be open	2020 With a 92% efficient furnace and add condensate drain line, reconfigure flues and new Wi-Fi capable thermostat, add AC	$15,000	Twice yearly Change Filter, CO and flow Inspection	$150
	Radiant Heaters	10	Modine	MHR 30 or 60	Natural Gas	30,000 or 60,000				1997?	yes	None	3 generic thermostats	yes, except for mezzanine which appears to have the circuits switched off.	Unit in North Bay has burnt/melted plastic on grill. Insure that batting net is uncompromised	Plan for 1 failure replacement a year starting in 2020 until all have been replaced	$1,000/each	Inspect Yearly	
	Radiant Heaters	4	Modine	IHR 30s 48	Natural Gas	30,000				2017	yes	None	1 thermostat	yes	Addition space	2042	$1,000 each	Inspect Yearly	$100
	Ceiling Fans	5	Unknown	Unknown 52" Diameter approximately	Electric					2004?	None	none	Dial fan speed	Yes		2025 replace all 5 fans and controls	$500 each	Inspect Yearly	q
	Ceiling Fans	2	Unknown	Unknown 52" Diameter approximately	Electric					2017	None	none	Dial fan speed	Yes	Addition Space	2037	$500 each	Inspect Yearly	$0

Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Bathroom Exhaust Fans	2	Penn Zephyr	Unknown	Electric				unknown-larger capacity	Assumed 1997	None	seems tight	Occupancy Sensor	Yes		2020 with Panasonic multi-speed fan110CFM	$800 each	Inspect Yearly	$0
	South Bay Exhaust Fan	1	Penn Barry	SX105BC	Electric				1200CFM approx.		yes		Time Dial	Yes				Install CO and combustible gas sensor for auto turn on & Lubricate	$1000 Initial and $50 year
	Addition Exhaust Fan	1	Greenheck	CW-161-VG	Electric				3635	New Addition		Through-Wall	Manual, Gas detection		Addition Space	2042		Inspect Yearly	$100
	Vehicle Exhaust Fans	2	DSP-Monoxivent	536 1 52 W/Baldor VM3545 Motor	Electric					Assumed 1997				Yes		2037	$10,000	Inspect Yearly	$100
	Fire Suppression	1	Various	Wet						Assumed 1997	Yes			yes				Annual Inspection, Occasional Head failure or leak fixing	$100 yearly for heads in addition to inspection

Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Grease interceptor	1	Unknown							Assumed 1997								Cleaning as needed, yearly inspection	$500 yearly
Recommended	CO and Combustible Gas Auto Exhaust for North Bay															2020	$5,000	100	
Recommended	Insulation																	Fix loose insulation in north bay	$300
Admin Building																			
	Chiller	1	Aaon	LC-38	Electric			10 EER	36 Tons	2011	Yes		DDC	Yes		2041	$25,000	Yearly Inspection, Pumps, Misc.	$500
	Boilers	3	Hamilton	EVO 299	Natural Gas	300	285			2011				yes		2041	$35,000	Yearly inspection, condensate neutralizer	$500
	Hot Water Storage Tank	1								2011			DDC	yes		2031	$4,000	Yearly Inspection	$100
	Solar Hot Water Heater	1			Solar/ Electric					2011			Self Contained	yes		2031	$5,000	Yearly Inspection	$100

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Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Snowmelt System	1	Bell & Gossett, Teckmar	Heat Exchanger P20,	Electric					2011			Tekmar	Yes		2031	$2,000 (controller only)	Yearly Inspection	$100
	Fan Coils	20	Enviro-Tec	HPP and HLP	Electric				Various	2011	yes	yes	DDC	Yes	Conference Room unit surges	2041	$5,000 Each	Filters & Inspection	$3000
	Server Room Air Handler	1	Liebert	MMD8TCDCHHHG	Electric				108MBH	2011	yes		DDC	yes		2041	$15,000	Filters & Inspection	$150
	Electric Wall Heater	1	Qmark	AWH3150	Electric	1500W				2011					Fire Riser Room	2041	$1,000	Inspect yearly	$0
	Ceiling Mounted Exhaust Fans	5	Cook	Various	Electric				Various	2011					Restrooms, Break, janitor & elevator	2031	$1,000 each	Inspect yearly	$0
	Grease Fan	1	Cook	195RX8B	Electric				1728	2011					Kitchen	2031	$8,000 Each	Clean Quarterly	$1,000/Year
	Inline Fans	4	Cook	Various	Electric				Various	2011				yes	Outside Air	2031	$2,000 Each	Inspect Yearly	$100 Yearly
	Inline Pumps	4	Bell & Gosset & Grundfos	Various	Electric									yes	Hot & Cold Circulation	2031	$2,000 Each	Inspect Yearly	$100, Yearly
	HVAC Plant accessories		Various											yes	expansion tanks/Strainers, Etc.	2031	$10,000 for all	Inspect Yearly	$100 Yearly
	Grills, Diffusers, Louvers		Various	Various						2011				yes				Clean Yearly	$100 Yearly
	DDC system		Various							2011				yes		2031	$25,000	Upgrades	$500 yearly

Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Fire Suppression System	1	Various							2011	Yes			Yes				Heads, Compressor	$500 yearly
	Computer Fire Suppression		Ansul							2011	yes			yes				Recharge Cylinder	$300 yearly
	Kitchen Fire Suppression		Ansul							2011	yes			yes				Recharge Cylinder	$300 yearly
Warehouse Office Building																			
	Chiller	1	Aaon	LFA031	Electric			10 EER	31 Tons	2016	Yes		DDC	Yes		2041	$35,000	Inspect Yearly	$300, Yearly
	Boilers	2	Lochinvar	FTXN0725	Natural Gas	725	705	97%		2016	yes	yes	DDC	yes		2041	$35,000	Inspect Yearly	$300, Yearly
	Indirect Water Heater	1			Boilers					2016			Self Contained	yes		2036	$4,000	Inspect Yearly	$100, Yearly
	Snowmelt System	1	Bell & Gossett, Teckmar	Heat Exchanger P20,	Electric					2016				yes		2036	$2,000 (controller only)	Inspect Yearly	$100, Yearly
	Fan Coils & Hydronic Heaters	10	Trane	BCHD & UHS	Electric				Various	2016	yes	yes	DDC	Yes		2041	$5,000 Each	Filters & Inspection	$3000

Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Server Room Air Handler	1													Installed by Clear Capital	Assumed to be removed when CC moves out			
	Ceiling Mounted Exhaust Fans	4	Panasonic	FV	Electric				Various	2016				yes	Restrooms, Break, janitor & elevator	2041	$1,000 each	Inspect Yearly	$100, Yearly
	Relief Fan	1	Greenheck	QEI -24-II-75	Electric				Various	2016				yes, but not currently in use, grease smell	Economizing	2041	$5,000	Investigate grease smell and controls. Inspect Yearly, Replace Belt occasionally	$2,000 investigation$200 Yearly
	Inline Pumps	2	Wilo,	Various	Electric					2016				yes	Hot & Cold Circulation	2031	$3, 000 each	Inspect Yearly	$100, Yearly
	HVAC Plant accessories		Various							2016				yes	expansion tanks/Strainers, Etc.	2036	$10,000 for all	Inspect Yearly	$100 Yearly
	Grills, Diffusers, Louvers		Various	Various						2016				yes				Clean Yearly	$200 Yearly
	Controls System		Distech	Various						2016				yes		Upgrade 2020 to Graphical Interface	$15,000	Inspections, Upgrades	$500 yearly
	Fire Suppression System		Various							2016				yes				Heads, Compressor	$500 yearly

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Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
Warehouse A																			
	Unit Heaters	2	Reznor		Natural gas					1994?	No lateral bracing		Basic thermostat	Did not attempt, boxes too close, hasn't been started in at least 8 years	10 years life remaining if used	2023 if used again with Reznor UDAS-175	$6,000	Add lateral brace ASAP 1ft Clearances must be maintained	$800
	Exhaust Fans	2									None			Did not attempt.	Not currently used			Add lateral brace on round duct ASAP If going to be used need new belts & general tune up. Needs investigation and possible removal.	$300
Warehouse B																			
	Unit Heater	2	Reznor	UDAP175	Natural Gas	175,000 BTU	145250 BTU	83%		Sep-02	No lateral bracing	Could use sealing	Basic thermostat	yes	Dusty fan needs cleaning	2032 with UDAS-175	$6,000/each	Add lateral brace ASAP Add programable thermostat	$800 & $600

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Warehouse C																			
	Unit Heaters	2	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994	No lateral bracing	Seems tight	Basic thermostat	Did not attempt, boxes too close		2024 if used again with UDAS-175	$6000/ Each	2013 Add lateral brace	800
Warehouse D																			
	Unit Heater	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994?	No lateral bracing	Seems tight	Programable thermostat	Yes		2024 with UDAS-175	$ 6,000	2020 Add Lateral Bracing	800
	Unit Heater	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994?	No lateral bracing	Seems tight	Programable thermostat	Yes		2024 with UDAS-175	$ 6,000	2020 Add Lateral Bracing	800
Warehouse E2																			
	Unit Heater	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994?	No lateral bracing	Seems tight	Basic thermostat	Yes		2024 with UDAS-175	$ 4,500	2020 Add Lateral Bracing	800
Warehouse E3																			
	Unit Heater	1	Reznor	FE 165-H	Natural gas	165,000 BTU	132,000 BTU	80%		1994	No lateral bracing	Could use sealing	Programmable Thermostat	yes		2024 with UDAS-175	$ 6,000	2020 Add Lateral Bracing	800

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	Exhaust Fans	2											could not find			Not in use. If used need to lubricate and change belts		2020 Add lateral brace on round duct	300
Warehouse Bathroom																			
	Wall Heater	1	Unknown	Unknown	Electric	Unknown	Unknown			2014	None	None	dial	yes		2040	$ 200	Inspect Yearly	
	Water Heater	1	Hoyt	6 FC	Electric	1500 Watts			6 Gallons	1980's?	None	N/A		yes	3/4" Pipe running from unit causes too much of a delay to get hot water	2020 with Instahot and 3/8" line from heater	$ 600	Inspect Yearly	
	Exhaust Fan	1	Unknown											yes		2025	$ 300	Inspect Yearly	
Hangar M																			
	Dry Fire Suppression															2025 replace air compressor	$ 2,000	Replace heads as needed	$300/ year
	Unit Heater	1	Reznor	EGE02	Electric									yes		2030	$ 750	Inspect Yearly	

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	Water Heater			Unknown	electric				10 gallon?					Yes		2020 with Instahot and 3/8" line from heater	$ 600	Inspect Yearly	
	Exhaust Fan															2025	$ 300	Inspect Yearly	
Hangar L																			
	Unit Heater	1	Reznor	EGE02	Electric									yes		2030	$ 750	Inspect Yearly	
	Dry Fire Suppression	1												yes		2025 replace air compressor	$ 2,000	Replace heads as needed	$300/ year
Careflight																			
	Cooktop Exhaust Fan	1								2011	None					2032	$ 400	Inspect quarterly & clean filters as needed	
	Water Heater	1	Bradford White	M440T6FBN	Natural Gas	40,000 BTU		80%	40	October 2011	Yes	Common with Furnace		yes		2032	$ 3,000	Brace Flue ASAP	200

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Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Furnace	1	Lennox	G16Q4-75-1	Natural Gas	75,000 BTU		79%		1985	Flue needs more bracing	Common with Water Heater	Programable Thermostat		Air filter needs to be changed	2020	$ 6,000	See above for Flue change air Filter twice yearly	60
	Air conditioning	1	Carrier	38CKC036340	Electric	208V/ 30A Rating			3 Ton	2000						2020	$ 4,000	Refrigerant recharge if needed	500
	Bath Exhaust Fan	2	Unknown		Electric								wall switch			2025	$ 400	Inspect Yearly	
Garage																			
	Unit Heater	1	Reznor	FE200-H	Natural gas	200,000 BTU	160,000 BTU	80%		1994	No lateral bracing	Needs to be sealed	Basic thermostat	Yes	Needs to be dusted	2024 with UDAS-175	$ 6,000	2020 Add Lateral Bracing	800
	Water Heater	1	Rheem	81VP108	Electric	2000 Watts			10 gallon	1992	None	None		Yes		2025 With Instahot	$ 600	Add Lateral bracing	50

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Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Exhaust Fan	1	Acme Centri Master	PNU135RGG2	Electric		1/2 HP						Switch		Fire Suppression needed under hood	2020 Move fan to roof to provide code clearances Add Fire Suppression to hood	$ 10,000	Clean, Change Belt,	100
	Furnace	1	Rheem	RGRA-10EZAJS	Natural Gas	105,000 BTU	97,000 BTU	92%		2000					2025	$6,000		Add additional strapping including lateral bracing to duct. Change filter twice yearly. Condensate drain exits side of building and drips onto walkway which is not best practice should go to sewer drain. Add condensate neutralizer. Add 1/4" screen to flues for code pest control	200 & 60
	Water Heater	1	Noritz	N-063S	Natural Gas	194,000 BTU			193 Gal/HR	2004		Appears acceptable				2030	$ 2,500		
	Domestic Range Hood	1											Switch	No	Assumed not used				

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Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Wall Furnace	1	Louisville Tin & Stove Co.	DVC 5 92	Natural Gas	55,000 BTU		75-80%		1994?			Basic Thermostat	No	Spark ignition but gas did not turn on	2020 By extending duct from furnace and removing this unit	$ 500		
	Bath Exhaust Fan	2	Unknown													2020	$ 200		
	Exhaust hood and Fan	1	Coleman adapted furnace										Switch	yes	Backdraft damper is not automatic				
	Furnace	1	Rheem	RGRA-10EZAJS	Natural Gas	105,000 BTU	97,000 BTU	92%		2000					2025	$6,000		Add additional strapping including lateral bracing to duct. Change filter twice yearly. Condensate drain exits side of building and drips onto walkway which is not best practice should go to sewer drain. Add condensate neutralizer.	200 , 60, & 300
Hangar 1																			
	Unit Heaters	3	Reznor	FE250	Natural Gas	250,000 BTU	200,000 BTU	80%		1994	No Lateral Bracing	Might need sealing	Basic Thermostat			2025 with Reznor UDAS-175 if used	$ 6,000	Add lateral brace ASAP	1500
	Unit Heater	1	Reznor	UDAS200	Natural Gas	200,000	166,000 BTU	83%		2010	Lateral Bracing					2040	$ 6,000		

Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
	Water Heater	1	GE	GE50T06AAG	Electric	4500 Watts			50 Gal	2006	No Bracing	N/A		Yes		2031 with Natural gas high efficiency condensing model	$ 3,000	Add lateral bracing ASAP Needs Overflow pan	400
	Furnace	1	BDP/Carrier	395CAV060135	Natural Gas	132000 BTU	107,000 BTU	81%		1994			2 thermostats?	lock box over bottom thermostat, top thermostat does not work		Remove 2020 with Remodel	$ -		
	Bath Exhaust Fan	2	Unknown													Remove 1 in 2020 with Remodel		Inspect Yearly	

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Picture	Unit Type	Quantity	Manufacturer	Model	Fuel Type	Input	Output	Assumed Original Efficiency	Size	Manufactured	Bracing	Flue/ Duct	Controls	Starts and Runs	Other	Replace	Replacement Cost	Maintenance	Maintenance Cost
Civil Air Patrol																			
	Electric Wall Heater	2	Various		Electric									yes		remove with decommissioning of space			
	Portable Electric Heater	2												Didn't check	Fire Hazard	2020 with electric wall heater	$ 800		
	Unused Ducts and Fans	3												No				Remove and close up or get running again	1000
Airport Wide																			
	Plumbing Fixtures (toilets/sinks etc.)															Plan for replacing one fixture/year	$500 yearly		$500 yearly
	Natural Gas Lateral Bracing														Various locations are not well secured			Add bracing & Strapping	1000

Notes
1. All costs are in 2019 dollars.

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7.0 Electrical

SA Engineering conducted a high-level survey of many of the TTAD structures, taking pictures of typical findings at each site and annotating them with a brief explanation of the issue being displayed. This is an update of similar work undertaken in 2013 and parts of the 2013 FMP are incorporated into this update where previous recommendations have not yet been implemented due to budgetary or priority issues.

There are instances of materials or methods that should be updated to ensure full compliance with current National Electrical Code (NEC), although there is some differences of opinion among professionals as to interpretations of the code There are perhaps 15 commonly found issues, but a number of instances of each.

7.1 What is the NEC?

The NEC is a minimum safety standard that has been continuously refined since its inception – it provides a structured approach to the methods needed for correct use of electrical materials to create power distribution and control systems that are both useful and safe. Code violations do not always mean an immediate danger. The point is that all deviations from NEC requirements can compromise safety and once identified should be corrected.

7.2 Recommended Approach to Repairs

To reiterate, the pictures provide a cursory overview of certain issues regarding how some work has been installed over the years, accumulated storm/weather damage, and aging. It will take a more detailed review of each of the buildings or structures to create an itemized list of the recommended changes with parts listed, labor estimated, and a plan for the rebuild. For now, SA Engineering estimated electrical repair budgets for virtually all of the TTAD buildings or sites. These are included in the overall maintenance spreadsheets. The electrical cost estimate shows the amount estimated to bring the particular facility up to code/good repair and provide on-going yearly maintenance from that point. Depending on when contracts are let, the initial repair budget could be spread over two budget periods. Individual hangars could be scheduled over several budget periods.

Producing plans and specifications for formal competitive bidding by licensed electrical contractors will need a larger effort since the plans must show details (a representative drawing or picture of each type of repair required) and accurately quantify the number of each type. This approach will be needed for those sites needing complete or virtually complete rebuilding of their electrical systems. However, smaller, more limited and more easily defined repairs could, perhaps, be done site-by-site as outlined below.

SA Engineering proposes that an efficient way to handle limited scope repairs is to first qualify a select group of electrical contractors who will be invited to do the work based on time and

materials at a contracted, cost-not-to-exceed price. A TTAD inspector would monitor the work in the field to confirm labor. Each site would be inspected by the group of selected contractors with an engineer or inspector going over the actual work prior to accepting a cost-not-to-exceed bid from each contractor. Thus, the identifying and listing of details could be done when contractors are on site. A set of pictures would be taken for distribution to all the contractors. A variation of this for very small jobs could be to work directly with a single contractor to price the work and actually do it right then – a contractor/inspector team could be very efficient.

7.3 Not Inspected This Year

The Fuel Farm, Self-Serve Tank, beacon towers and Administration Building and runway lighting system were not inspected for this FMP update. Recommended actions from the 2013 FMP are still in place at the Fuel Farm and Self-Serve Tank, and are restated below.

7.4 The Issues

Some of the highest priority issues are addressed below:

Airplane Hangars: Because of the presence of fuel tanks in the plane, NEC defines certain boundaries inside hangars as classified areas. Within these boundaries, special methods and materials are required. In some hangars there are tenant-installed light fixtures over the wings, which are defined as a classified area. These may have been compliant with current codes at the time of installation, but some are not currently compliant. Similarly, there are ordinary receptacles installed as part of original construction as well as ordinary electrical equipment and wiring installed by tenants within classified area boundaries. Rubber cords have been used in place of fixed wire in conduit for connections to the door motors and controls. SA Engineering also found Service Entrance equipment not properly anchored (it could fail during an earthquake), manual transfer switches installed that are not rated for the available fault current (could fail explosively), raintight fittings installed where wet location fittings are required, Service Entrance grounding not considered when installing manual transfer switches, etc. Hangars should be updated with new receptacles to reduce tenants creating hazards with non-compliant electrical equipment. Signage identifying classified area boundaries and usage restrictions should be part of the work in all hangars.

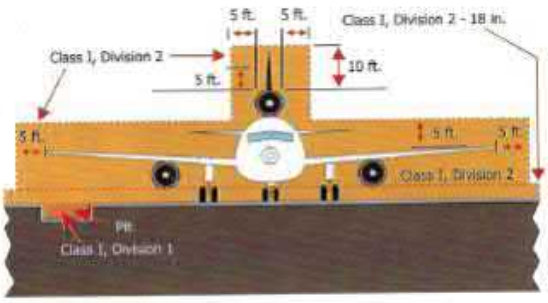

Figure 7-2. Typical aircraft hangar area classification based on classified areas.

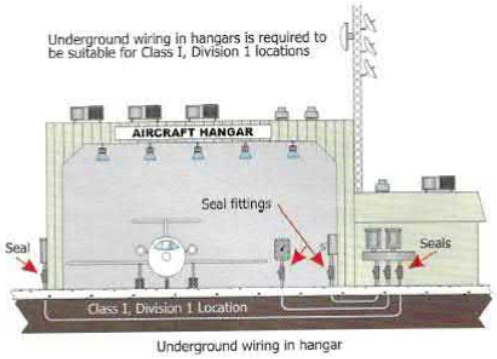

Figure 7-1. Underground wiring installed at aircraft hangars must meet the requirements of Article 501.

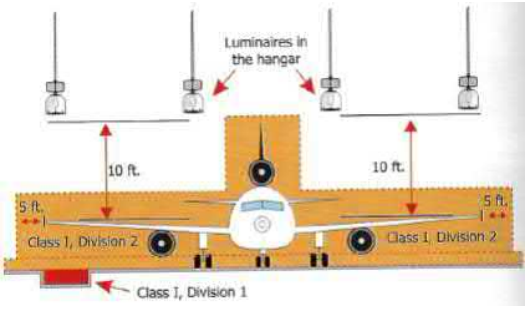

Figure 7-4. Luminaires are required to be totally enclosed types where installed within 10 ft of the upper surfaces of aircraft wings in hangars.

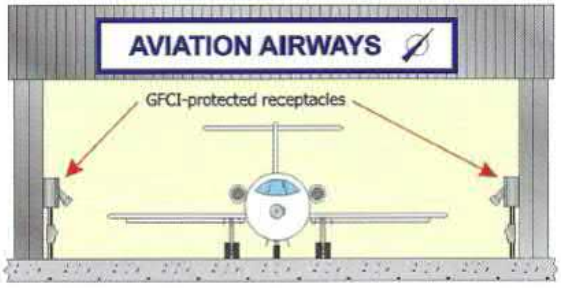

Figure 7-3. GFCI protection is required for 125-volt, single-phase, 15- and 20-ampere receptacles operating at 50/60 hertz.

Other Buildings (Excludes Hangars): Snow and ice damage to electrical enclosures, update grounding of system and equipment, open wiring enclosures accessible to non-qualified persons, moisture in panels from improper application of conduit fittings.

AWOS: Unsealed conduits with rodents eating the power conductor insulation, trip hazard in front of the power panel.

Self-Serve Tank: Vapors and liquid from fueling systems are particularly dangerous when mixed with arcing electrical contacts. The NEC deals with this by defining boundaries for hazardous (Classified) areas such as in the vicinity of fuel storage and transfer systems and requiring certain methods and materials within these boundaries. One of the requirements is to have an emergency disconnect farther than 20 ft, but not greater than 100 ft from the dispensing point. This requirement should be met. Also, electrical equipment not rated for installation in a Classified area is installed within those areas. If fuel vapor were to be present, arcing in the unsealed contacts in ordinary electrical equipment could ignite it.

Fuel Farm: The required Emergency Disconnect Switch is not labeled. The small office within the Classified (Hazardous) Area has ordinary electrical equipment installed. There are conduits into the Classified Area that are not sealed. The manual transfer switch for use with a portable generator does not have the NEC required minimum working space in front of the switch (also an OSHA problem). The fuel truck block heater cords have an ordinary electrical equipment connector within the Classified Area.

Throughout: There are a number of instances of installations which should be updated to comply with current code.

8.0 Drainage

In July 2019, Auerbach Engineering met with airport staff to catalog all storm drain structures. The location, type, and condition of each structure was recorded and is listed in Table-1. Storm drain structures associated with the recently constructed WOB were assumed to be in good condition and were not assessed in the field.

The airport's storm drain collection system consists of more than 11,500 lineal feet of 6-inch through 40-inch diameter pipelines, the majority of which is corrugated metal pipe (CMP) and reinforced concrete pipe (RCP) with limited amounts of high-density polyethylene (HDPE). Other components include 65 drainage inlets, slotted drains between Hangar Buildings: A/Jet Ramp, B/C, C/D, D/E, E/F and G/H, and on the south and west sides of the warehouse, trench drains along the south side of the ramp in the vicinity of the Administration Building and north of the maintenance building, two slide gates, four manholes, six yard drains, one OMPI, and three 250 gallon sand/oil separators at the Fuel Farm and wash rack. The storm drain collection system is depicted in Sheet 7 in Appendix A.

The collection system discharges to basins/swales located on undeveloped portions of the airport property (generally at the end of each runway) where the runoff infiltrates into the ground. This discharge is allowed through an Industrial Stormwater Discharge Permit issued by the Lahontan Regional Water Quality Control Board; District staff submits monthly wet-weather and quarterly dry-weather reports to the Water Quality Control Board.

8.1 Suggested Storm Drain Collection System Improvements and Maintenance:

1. The condition of the pipelines and drainage inlets is considered good, with few exceptions. Though erosion is present in many of the RCP structures, it is generally minor and does not impede the function. Erosion is extreme in culverts 117 and 118, exposing significant amounts of rebar and requiring repair. Four culverts (23, 79, 82, and 83) are completely or partially buried, rendering them nonfunctional. However, no drainage problems have been observed near these culverts; thus, remedial action is not immediately required. If future drainage problems are observed, these structures can be uncovered and cleared of sediment to restore function. The condition of the remaining infrastructure should be reassessed whenever repairs to the overlying pavement are planned.
2. The pipe and drainage swale network should be inspected annually and cleaned of rocks and sediment when necessary to maximize flow capacity. Accumulated sediment and organic matter should be removed from culverts in spring of each year. Culverts 11, 18, 24, 32, 51, and 85 contain large amounts of sediment and require cleaning prior to annual maintenance.

3. The drainage inlets installed as part of the construction of the Administration Building and WOB include a sediment and petroleum filter insert, these devices should be serviced in accordance with the procedures and timing recommended by the manufacturer. Accumulated sediment and organic matter should be removed from the bottom of drainage inlets in spring of each year. Vegetation removal is needed in DI-25 prior to spring inspection.
4. The overflow containment structures at the Fuel Farm should be visually inspected at least annually to ensure maximum capacity and functionality.
5. Accumulated sediment and organic matter should be removed from the two trench drains near the Maintenance Building. Trench drains should be inspected and cleaned each spring.

Figure 8-1 Exposed Rebar on Culvert 118

8.2 Reported Drainage Issues and Recommendations:

Airport staff reported drainage issues that have been observed during storm events. Auerbach Engineering has not had an opportunity to observe or quantify these issues. However, based on the information provided by airport staff, Auerbach Engineering has developed recommendations to address each issue.

1. The trench drain in front of the Administration Building appears to have insufficient capacity to drain the flow coming off the ramp during significant events or heavy snow melt.

   Recommendation: Evaluate the capacity deficit. Replace the trench drain with a larger trench drain to increase capacity.
2. Stormwater doesn't drain between the ramp and Chandelle Way, in the area used for snow storage.

Recommendation: Pooling water adjacent to pavement can decrease the lifetime of pavement. Evaluate if lack of drainage is causing damage to adjacent pavement. If damage is occurring, investigate alternatives to improve drainage.

3. Basin 1, north of the Maintenance Building, appears to hold water longer than desirable.

   Recommendation: Evaluate options for enhanced infiltration or drain.

4. Basin 3, south of Hangar H, appears to hold water longer than desirable.

   Recommendation: Evaluate options for enhanced infiltration or drain.

5. The infield north of Runway 11-29 and between Taxiway G and Runway 2-20 has problems draining on the east side. This causes ice to buildup on Runway 2-20 during winter.

   Recommendation: Investigate cause of drainage issue. Evaluate options for improved drain out.

6. The trench drains in the Fuel Farm need replacement.

   Recommendation: Assess trench drains. Replace and repair as needed.

7. The south end of the jet ramp west of Hangar A floods.

   Recommendation: Investigate cause of drainage issue. Evaluate options for improved drain out.

Many of the reported drainage issues require investigation before recommendations can be made. Therefore, it is was recommended that a Drainage Assessment be completed to address these drainage issues.

8.3 Suggested Timing and Budget Implications

The Airport's drainage infrastructure appears to be in good condition. Storm drain structures do require regular, generally annual, maintenance. Additionally, several needed repairs have been identified and the drainage issues observed by airport staff should be investigated to determine if remedial action is appropriate.

Table 8-1. Storm Drainage Structures

No.	Diameter (Inches)	Type	Condition	Notes
Culverts				
1	12"	RCP	Eroded	
2	18"	RCP	Good	Clean
3	18"	RCP	Good	Clean
4	18"	RCP	Minor Erosion	Sediment
5	30"	RCP	Good	Clean. Angled pipe, flows off property. Rock armor at inlet
6-1	18"	RCP	Minor Erosion	Sediment
6-2	18"	RCP	Minor Erosion	Sediment
7	18"	RCP	Eroded	Some sediment
8	18"	RCP	Good	
9	13" x 21", Originally 18”	CMP	Squished	Pipe has been deformed to elliptical shape
10	18"	RCP	Good	Some sediment
11	12"	RCP	Good	Heavy Sediment
12	18"	RCP	Good	Clean
13	18"	RCP	Good	Some sediment
14	Inaccessible	-		
15	24"	RCP	Good	Some sediment
16	Inaccessible	-		
17	24"	RCP	Good	Sediment
18	18"	RCP	Good	Heavy Sediment
19	18"	RCP	Good	Sediment
20	24"	RCP	Good	Sediment
21	24"	RCP	Good	
22	Inaccessible	-		
23	Completely Buried	-		
24	18"	RCP	Good	Heavy Sediment
25	Inaccessible	RCP		
26	40"	RCP	Good	Rock armor on either end, angled
27	18"	RCP	Good	
28	Inaccessible	RCP		
29	Inaccessible	RCP		
30	Inaccessible	-		
31	18"	RCP	Good	Some sediment
32	18"	RCP	Good	Heavy Sediment
33	Inaccessible	CMP		Should be improved when the area is paved.
34	18"	RCP	Great	Doesn't appear to ever have flow. Should be improved when the area is paved.
35	24"	CMP	Great	
36	18"	HDPE	Good	
37	8"	HDPE	Good	
38	8"	HDPE	Good	
39	8"	HDPE	Good	
40	18"	CMP	Good	

No.	Diameter (Inches)	Type	Condition	Notes
41	Inaccessible			
42	12"	HDPE	Good	
43	12"	HDPE	Good	
44	Inaccessible			
45	12"	HDPE	Good	
46	12"	HDPE	Great	Clean
47	Inaccessible			
48	12"	HDPE	Good	Outlet unclear
49	12"	HDPE	Good	
50	12"	HDPE	Good	
51	12"	HDPE		Needs cleaning; No outlet could be found
52	18"	HDPE	Good	
53	12"	HDPE	Good	
54	18"	HDPE	Good	Slide gate on one end
55	12"	HDPE		New with WOB. Not accessed.
56	12"	HDPE	Good	DIs on both ends
57	12"	HDPE		New with WOB. Not accessed.
58	18"	HDPE	Good	Some sediment
59	12"	HDPE	Good	New with WOB. Not accessed.
60	30"	HDPE		New with WOB. Not accessed.
61	12"	HDPE		New with WOB. Not accessed.
62	6"	SDR		New with WOB. Not accessed.
63	6"	SDR		New with WOB. Not accessed.
64	6"	SDR		New with WOB. Not accessed.
65	12"	HDPE		New with WOB. Not accessed.
66	12"	HDPE		New with WOB. Not accessed.
67	6"	SDR		New with WOB. Not accessed.
68	12"	HDPE		New with WOB. Not accessed.
69	12"	HDPE		New with WOB. Not accessed.
70	12"	HDPE		New with WOB. Not accessed.
71	30"	HDPE		New with WOB. Not accessed.
72	12"	HDPE		New with WOB. Not accessed.
73	12"	RCP	Good	
74	12"	HDPE	Good	
75	18"	RCP	Good	
76	24"	CMP	Good	
77	12"	CMP	Good	
78	12"	CMP	Good	
79	18"	HDPE		One end is inaccessible
80	24”	HDPE		Under construction
81	18"	CMP	Good	Heavy sediment
82	12"	CMP	Nonfunctional	Buried
83	24"	CMP	Nonfunctional	Buried on one end
84	18"	CMP	Good	Some sediment
85	8"	HDPE	Good	Heavy sediment. Has valve to close pipe
86	18"	RCP	Eroded	
87	8", elliptical	CMP	Squished	

No.	Diameter (Inches)	Type	Condition	Notes
88	18"	CMP	Squished	
89	18"	RCP	Good	Clean
90	36"	RCP	Good	Function will be addressed as construction continues southwest of the airport
91	18"	CMP	Good	Some sediment
92	18"	CMP	Good	Water pools
93	24"	RCP	Good	
94	12"	HDPE		New with WOB. Not accessed.
95	12"	HDPE		New with WOB. Not accessed.
96	12"	HDPE		New with WOB. Not accessed.
97	12"	HDPE		New with WOB. Not accessed.
98	12"	HDPE		New with WOB. Not accessed.
99	12"	HDPE		New with WOB. Not accessed.
100	12"	HDPE		New with WOB. Not accessed.
101	12"	HDPE		New with WOB. Not accessed.
102	30"	HDPE		New with WOB. Not accessed.
103	12"	HDPE		New with WOB. Not accessed.
104	12"	HDPE	Good	
105	24"	CMP	Good	
106	12", elbow	CMP	Good	Dense leaf litter
107	24"	CMP	Good	Some sediment
108	18"	CMP	Good	
109	18"	CMP	Good	Some sediment
110	18"	CMP	Good	
111	18"	CMP	Good	
112	18"	CMP	Good	
113	18"	CMP	Good	
114	18"	CMP	Good	
115	24"	CMP	Good	Clean
116	18"	CMP	Rusted	
117	18"	RCP	Extreme Erosion - Rebar is exposed	
118	18"	RCP	Extreme Erosion - Rebar is exposed	
Drain Inlets				
1			Good	Clean
2			Good	Clean
3			Good	Clean
4			Good	Clean
5			Good	Sediment buildup
6			Good	Clean
7			Good	Clean
8			Good	
9			Good	
10			Good	
11			Good	Doesn't seem to be effective
12			Good	Doesn't seem to be effective

No.	Diameter (Inches)	Type	Condition	Notes
13			Good	
14			Good	
15			Good	
16			Good	
17			Good	
18	36" X 24"			New with WOB. Not accessed.
19	36" X 24"			New with WOB. Not accessed.
20	36" X 24"			New with WOB. Not accessed.
21	36" X 24"			New with WOB. Not accessed.
22	36" X 24"			New with WOB. Not accessed.
23			Good	
24			Good	
25			Good	Vegetation growing, needs cleaning
26			Good	Some leaf litter
27			Good	Clean
28			Good	Clean
29			Good	Clean
30			Good	
31			Good	
32			Good	
33			Good	
34			Good	
35				Not accessed, in construction zone
36				Not accessed, in construction zone
37				Not accessed, in construction zone
38				Not accessed, in construction zone
39				Not accessed, in construction zone
40				Not accessed, in construction zone
41			Good	
42			Good	
43			Good	
44			Good	
45			Good	
46			Good	
47			Good	
48			Good	
49			Good	
50			Good	
51			Good	
52			Good	
53	36" X 24"			New with WOB. Not accessed.
54	36" X 24"			New with WOB. Not accessed.
55	36" X 24"			New with WOB. Not accessed.
56	36" X 24"			New with WOB. Not accessed.
57	36" X 24"			New with WOB. Not accessed.
58	36" X 24"			New with WOB. Not accessed.
59			Good	

No.	Diameter (Inches)	Type	Condition	Notes
60			Good	
61			Good	
62			Good	
63			Good	
64			Good	
65				Unclear what structure is. Probably supposed to be a DI. It isn't sealed; animals use it to burrow. Should be replaced.
Slot Drains				
1	18”	CMP	Good	
2	18"	CMP	Good	Flow direction unclear
3	18"	CMP	Good	
4	18"	CMP	Good	
5	18"	CMP	Good	
6	18"	CMP	Good	
7	18"	CMP	Good	
8	18"	CMP	Good	
9	18"	CMP	Good	
10	18"	CMP	Good	
11	18"	CMP	Good	
12	18"	CMP	Good	
13	18"	CMP	Good	
14	18"	CMP	Good	
15	18"	CMP	Good	
16	18"	CMP	Good	Replaced in 2015
17	18"	CMP	Good	
18	18"	CMP	Good	
19	18"	CMP	Good	
20	18"	CMP	Good	
Trench Drains				
1	-	CMP	Good	Sediment buildup. Needs Cleaning
2	-	CMP	Good	Sediment buildup. Needs Cleaning
3	-	CMP	Good	Clean. Undersized.
Storm Drain Manholes				
1	-	-	Good	Clean
2	-	-	Good	Clean
3	60”			New with WOB. Not accessed.
4	60”			New with WOB. Not accessed.
Basins				
1	-	-		Doesn’t drain
2	-	-	Good	
3	-	-		Doesn’t drain
OMPI				
1	48”			New with WOB. Not accessed.
A/C Swales				
1	-	-	Good	Directs flow north into rock armor in infield
2	-	-	Good	Directs flow around maintenance building
Slide Gates				

No.	Diameter (Inches)	Type	Condition	Notes
1	-	-	Good	
2	-	-	Good	Not used anymore
Overflow Structures				
1	-	-	Good	Functional, covered
2	-	-	Good	Functional, covered
Yard Drains				
1	24”			New with WOB. Not accessed.
2	24”			New with WOB. Not accessed.
3	24”			New with WOB. Not accessed.
4	24”			New with WOB. Not accessed.
5	24”			New with WOB. Not accessed.
6	24”			New with WOB. Not accessed.

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9.0 Utilities

Auerbach Engineering has updated the Utilities section of the FMP to include known improvements since the 2014 Utilities Maintenance Plan, facility data gathered during construction projects, and information provided by airport staff. A field investigation was not conducted.

TTAD owns and maintains the following types of utility systems:

- Domestic drinking water and fire protection
- Sanitary sewer collection, including on-site disposal at the EAA
- Power, including distribution, ramp lighting, emergency and security system power
- Communications

The Utilities section of the FMP includes the following components:

- Update of the Master Map of all utility infrastructure
- Identification of deficiencies (due to age or capacity)
- Development of maintenance strategies and protocols
- Quantification of required work both in terms of cost and timing

9.1 Master Mapping

For the 2014 Utilities Maintenance Plan, Acumen Engineering met with Airport staff to review all available as-built construction drawings dating from the 1970's and used those plans to compile utility information for the entire airport property into a Master Map file created in AutoCAD. The mapping is divided into a 22-page base grid system, supplemented by pages providing detail (increased scale) in areas with a significant amount of infrastructure (i.e. congested) and of individual systems such as ramp lights to allow troubleshooting and/or operation. Once the initial mapping was complete, Airport Staff was tasked with reviewing the drawings to correct the information based on actual field locations and "institutional knowledge". This process was repeated twice, the result being the mapping is considered accurate with respect to the location of underground infrastructure, the size and material of the pipe or conduit and the connecting surface feature (i.e. valve, manhole, pull-box, etc.). The digital map file was provided to the firm providing Geographic Information System (GIS) services to the Airport and imported into TTAD's ESRI software. The end result was utility information is available to Airport Staff both digitally and in the form of a paper "Map Book" that can be carried in each vehicle to assist Operations and Maintenance Staff with their daily duties. The mapping can and will be very helpful for project planning purposes to understand utility availability for new structures and potential conflicts that may be expected during construction. Auerbach Engineering has updated the map set to include improvements implemented since 2014 and facilities that have been located during the construction of

projects. While the mapping is considered accurate, it is only as good as the original source of the documentation (as-built construction drawings and employee memory); the location information must be continuously updated whenever the opportunity arises either as part of new construction or maintenance of the existing systems. To have an accurate depiction of utilities, surveying should be completed throughout the airport to locate all utilities exterior to buildings. The current Master Map Book is provided in Appendix A.

An in-pipe video inspection of the interior of representative sanitary sewer was conducted for the 2013 FMP to both assess the condition of the pipes and provide information on the location of branch and lateral sanitary sewer connections to the mainlines. Excavation of the oldest domestic water laterals to determine their location, materials and condition was also done.

9.2 Domestic Water and Fire Protection System

Description:

The airport's water distribution system is served by two connections to the Truckee Donner Public Utility District (TDPUD) system; one is directly south of the Administration Building and the other is just west of the Vehicle Maintenance Building. Auerbach Engineering met with Airport staff in November 2018 to review the TTAD's connection to TDPUD's water system. Both connections are equipped with a usage meter, six-inch pressure reducing valve (PRV) in parallel with a two-inch PRV, and six-inch double check backflow device.

The airport's water distribution system is comprised of approximately 11,000-feet of four to 12-inch diameter pipelines made of a variety of materials; the newer (1980's-current) pipes are Polyvinyl Chloride (PVC) while the older (1960's-early 1980's) are Asbestos-Cement (AC). There are 22 fire hydrants and seven buildings have fire sprinkler systems (Administration, Vehicle Maintenance, WOB, and Hangars L, M, N and P). The distribution system contains 24 in-line valves (not including those specifically for buildings or hydrants) that can be used to isolate individual sections of network. The expected service life of these pipelines, valves and hydrants is 60-80 years assuming reasonable initial construction methods, consistent pressure and regular maintenance/exercising (hydrants and valves). Domestic water is supplied to 13 buildings (Administration, Vehicle Maintenance, WOB, Garage, Warehouse, Hangar 1, EAA, WOB, West Side Modular, Hangar M, Hangar N, and Hangar P). The water supply to Hangar 1 has been upgraded during the repaving of Runway Romeo and construction of the Hangar 1 office in summer 2019. The glider port is served by an on-site well that was drilled and is operated/maintained by the concessionaire.

In March 2016 Engineered Fire Systems, Inc. performed a fire safety and fire sprinkler evaluation of the Warehouse. The Warehouse was determined to present a significant fire hazard with potential loss of life and property in a letter to TTAD dated March 10, 2016 due to a

lack of emergency exits and sprinklers. Four fire sprinkler system options were presented, and it was recommended that additional exits be incorporated. Additional exits have been added since 2016 per this recommendation.

Auerbach Engineering investigated the fire sprinkler system in Hangars N and P in February 2019. Hangars N and P require a water supply of 1,830 GPM @ 67 psi to serve the fire sprinkler system, but TTAD's water system can only provide 1,330 GPM at 67 psi. Auerbach Engineering recommended the following actions:

- Connect to the future water line to be installed in Joerger Road
- Replace both six-inch Reduced Pressure Detector Assembly with a six-inch Reduced Pressure Zone Assembly which is rated for a max UL flow rate of 1,500 gpm.
- Set both PRVs to open at 6,100-ft. Based on the above calculation this should provide >67psi at 1,830 GPM.
- Set two-inch PRVs to open ~10 psi higher.
- Confirm that distribution system can accommodate recommended pressures.

Airport Staff have expressed a desire for a plan to monitor water quality and distribution throughout the airport. Unknowns exist within the system (such as location and design of backflow prevention devices) that present potential water quality issues. The water distribution system should be investigated to ensure water quality standards are met throughout the entire system. Investigation should include the identification of water service connections, backflow needs, and potential sources of contamination and should inform the development of recommendations to the water system.

Figure 9-1. PRV Vault, Intersection of Chandelle Way and Truckee Tahoe Airport Rd.

Figure 9-2. 6" Watts Reduced Pressure Backflow Preventer in hot box

Figure 9-3. Water System Valves

Suggested Water System Improvements and Maintenance:

1. All mainline, fire hydrant and building service valve boxes should be cleaned and the valves exercised at least bi-annually. This preventative maintenance effort will ensure the valves are accessible and functional when circumstances require. If a building's shutoff valve cannot be located, a new valve should be installed.
2. Fire hydrants should be exercised annually to ensure they shut-off completely and that flows are not reduced by an inadvertently closed mainline valve in the distribution network. This maintenance also flushes the system removing sediment from valve seats that could preclude a valve from closing tight.

3. The fire sprinkler systems at the Hangars N and P should completed to meet recommendations by Auerbach.
4. A Water Master Plan should be developed to address fire flow and hazmat needs, assess the age and condition of the water infrastructure, locate water utilities, model and analyze water flow throughout the airport, assess water quality, and provide recommendations for a capital improvement plan for the water system. A Backflow Plan developed by a backflow specialist should be included in the Water Master Plan to assess backflow function and provide regular maintenance recommendations.

9.3 Sanitary Sewer System

Description:

The airport's sanitary sewer collection system connects to the Truckee Sanitary District (TSD) 21-inch diameter interceptor on the south side of Chandelle Way at seven locations: near the intersection of Truckee Airport Road and Chandelle Way, near the intersection of Aviation Way and Chandelle Way, northwest of Hangar P, Hangar M, the WOB, and the wash rack. The Garage and West Side Modular are directly connected on the north side of the Fuel Farm. The collection system consists of approximately 1,560 lineal feet of four- and six-inch diameter primarily PVC pipelines. There are 13 manholes, 18 sewer cleanouts, four sand/oil separators pre-treating waste from the floor drains in the Vehicle Maintenance Building, WOB, wash rack, and Hangar N, and a grease trap for the kitchen in the Administration Building. Sanitary sewer service is provided to the same 11 buildings that have domestic water service with the exception of the EAA Building which has a 500-gallon septic tank and leach field in lieu of being connected to the collection system. Three new sewer systems have been added since the 2014 Utilities Maintenance Plan: a gravity sewer line was connected from Hangar 1 to the intersection of Chandelle Way and Airport Road in summer 2019, a sewer line was added to serve Hangars N and P, and a sewer line was added to serve the WOB.

The previously described 2014 video inspection of a portion of the system showed the pipelines were in good structural condition with no apparent cracks, shear breaks or lateral off-sets. However, access to some pipelines was difficult due to missing building cleanouts and/or partial blockage caused by solids deposition (both rocks/dirt and waste) and the majority of the pipelines exhibited a build-up of FOG (fats, oils and grease) and/or other non-human waste on the walls or flowline. The EAA septic tank was cleaned in 2018. Visual inspection of the tank in 2014 did not indicate a degraded condition and the respective leach field reportedly function properly, i.e. no backups or surface daylighting of effluent. The glider port is served by an on-site septic system that was constructed and is operated/maintained by the concessionaire.

Figure 9-4 and Figure 9-5. 2014 Interior of Sanitary Sewer Pipes Serving Administration Building (left) and Vehicle Maintenance Building (right)

Suggested Sanitary Sewer System Improvements and Maintenance:

1. No sanitary sewer infrastructure replacement is proposed, the condition of the pipelines and manholes is considered good to very good.
2. All building cleanouts should be located, repaired as necessary and a box installed to provide protection from damage and ease in locating.
3. The sewer system should be tested every eight years.
4. The entire system should be cleaned every 10 years using a hydro excavator with a nozzle.
5. The grease trap should be cleaned every three months or as needed.
6. The sand/oil separator pre-treatment vaults should be cleaned on an as-needed basis based on an annual visual inspection and as required by the TSD.
7. The septic tanks should be pumped on a maximum four-year interval with the EAA building potentially requiring a more frequent interval due to the number of users. A visual inspection of the tank should be done at least annually to confirm the level of solids. Signage should be posted in the building to remind the users of the types of materials that can be discharged to the system (paper only) and that under no circumstances should chemicals be disposed of in the system.
8. TTAD may consider entering into a “Private Sewer Maintenance Agreement” with the TSD which requires pressure/leak testing of all parts of the system on an eight-year rotation.

9.4 Power Distribution System:

Description:

The power distribution system is a combination of airport owned and Truckee Donner Public Utility District owned infrastructure. The TDPUD is responsible for the distribution of power through vaults, switches, transformers, conduit and conductors up to the meter (referred to as the Service Entrance). Downstream of the meter, the airport owns and maintains indoor and outdoor power conduits, conductors, pull-boxes, panels and fixtures. The condition and required improvements to the building systems, including sub-panels, is described in the Electrical section of the FMP. The Airport's exterior equipment consists of conduits, conductors and sub-panels serving adjacent buildings (in most cases only every other hangar has a Service Entrance) and airfield improvements such as ramp and runway lighting, the AWOS, segmented circle, runway end identification lights (REIL), visual approach slope indicator (VASI), and the rotating beacon. The airport has two diesel and two natural gas powered emergency generators; one powers the Administration Building (portion), rotating beacon, segmented circle, self-serve fuel island and runway lighting. The second generator is located near the Vehicle Maintenance Building and powers a portion of the circuits in that facility. The third supplies the West Side Modular building. The fourth generator powers the Air Traffic Control Tower. Replacement of the Administration Building generator is proposed for 2021.

According to available records and Airport Staff knowledge, all original airport owned direct-bury power conductors have been replaced with conduit encased cables and all pull-boxes and vaults appear to be in good structural condition. The ramp lights were replaced in 2013 and the runway 11-29 lighting system in 2012. The runway 2-20 lighting is scheduled for replacement in 2023 through a Federal grant. The ramp lighting is controlled either manually or by photo-voltaic sensors mounted on a sub-panel located near the front of Hangar 1 and on the bottom of two poles for the jet ramp. Each installation has more than one light fixture and the number of lights that operate at any one time is manually controlled by switches at the pole. Mounted on each of the light poles is a power receptacle that is used during events such as the Airshow and for aircraft engine heaters; staff has indicated these circuit(s) typically trip when used. The runway, beacon and segmented circle lighting is powered by a sub-panel located in the power vault building. The runway lights' on/off function is controlled by either dispatch or a pilot if the airport is unmanned; the intensity is also controlled by dispatch or a pilot.


Figure 9-6 and Figure 9-7. Power Distribution Panels

Suggested Power System Improvements and Maintenance:

1. No power distribution infrastructure replacement is proposed
2. All at-grade pull-boxes should be inspected at least annually, prior to snow removal activity, to confirm the lids are secure and that the conductors are accessible.

9.5 Communication System:

Description:

The airport's communication system is a combination of AT&T (telephone) and district owned and maintained infrastructure. AT&T provides wired telephone service to the following buildings; Administration, Vehicle Maintenance, Warehouse, Hangar 1, WOB and the West Side Modular. TTAD's communication network connects the Administration Building to remote systems such as card operated access gates, self-serve fuel point-of-sale, hangar fire alarms, security cameras, the AWOS and flight tracking. As with the power system, all cables are contained within conduit and pull-box systems, no direct-bury cabling is being used. The connection between the Administration and Vehicle Maintenance buildings is through a fiber-optic cable, the remaining cables are copper.

Figure 9-8. Communication and Power Pull-Boxes

Suggested Communication System Improvements and Maintenance:

1. No communication infrastructure replacement is proposed
2. All at-grade pull-boxes should be inspected at least annually, prior to snow removal activity, to confirm the lids are secure and that the cables are accessible.
3. Label all cables entering and leaving at-grade pull-boxes with the building/system served.
4. Label all above-ground enclosures, inside or outside the cabinet, with the building/system served

9.6 Suggested Timing and Budget Implications

The Airport's utility infrastructure appears to be in very good condition, is well maintained and accessible. Other than the suggested replacement of the domestic water service lateral to the EAA Building within the next two or three years, no deficiencies or conditions warranting replacement were noted during our investigation. As described in the individual system narratives, there are a number of recommended enhanced maintenance procedures:

- Further exploration and confirmation of underground utility locations and regular updates of the mapping
- Regular inspection, operation and cleaning of the individual components (above and below grade) to ensure the system can function to its maximum capacity or conversely be isolated when necessary
- Labelling of power and communication equipment panels, enclosures and cables to facilitate system troubleshooting and improve mapping of system components

The majority of the maintenance work does not require specialized training or equipment and could be done by Airport staff as workload/schedule permits. Outside vendors/contractors will likely be necessary for the following tasks:

Mapping

- Annual mapping update budget: $1,500/year
- Survey All Utilities: $26,600

Domestic Water and Fire Protection System

- Fire protection upgrades in Hangars N and P: $250,000
- Water Master Plan Update: $22,700 in 2022

Sanitary Sewer System

- Testing of sanitary sewer system: $50,000 in 2022 with initial mapping, $25,000 every eight years after
- Cleaning of sanitary sewer system with vacuum/hydroflush equipment: $4,200 every 10 years (or if testing identifies any issues)
- Pump grease trap: $165 every 3 months
- Inspect the four sand/oil separator vaults: inspect annually, pump as needed ($745/each)
- Pump EAA septic tank: $1,000 every four years

Power Distribution System

- No maintenance costs proposed

Communications System

- No maintenance costs proposed

Over a 10-year period the cost of maintenance and improvements to utilities totals approximately $410,000 or approximately $41,000/year.

10.0 Towers

Day Wireless assessed the condition of the Air Traffic Control Tower, the Alder Hill Beacon and the Dry Lake Beacon. The Bald Mountain Beacon was not assessed. Their full assessment, maintenance recommendations, and associated photos are located in Appendix E and are summarized below.

Air Traffic Control Tower

The Air Traffic Control Tower appears to be in good condition overall. There is no visible corrosion, but there is minor paint chipping throughout the tower. The finish should be monitored annually for corrosion and additional paint chipping. The concrete foundation should be monitored annually for cracking. The Air Traffic Control Tower is not currently used to facilitate any communications equipment. Upgrades to the grounding are recommended if the tower is used to facilitate antennas in the future.

Alder Hill Beacon

The Alder Hill Beacon is in poor condition. The tower is not intended to be used in the current manner which it is being used. It is recommended that an engineering report be completed if the tower structure will continue to be used in the current manner.

About 85% of the installations on the tower are not to current industry standard and fail to use correct methods of mount/antenna/cable installations. The makeshift installation materials on the antennas should be removed and replaced with proper materials. An engineered tower analysis should be completed.

The horizontal bracing is sagging at 10 feet due to the weight of equipment mounted on the tower. The structure should be monitored annually for any additional movement. It is recommended that any unessential equipment be removed from the tower, an engineered tower analysis be completed, and the tower be thoroughly cleaned.

There is not a cable climb on the tower and the wood platforms are loose and weak. It is recommended that a cable safety climb be added and the platforms be replaced.

The tower paint has faded and chipped in many areas throughout the tower down to the galvanization. However, no corrosion was identified on the underlying areas. The finish should be monitored annually for any corrosion.

The lightening rod is currently not at the highest point on the tower. It should be raised to make it the tallest point on the tower top.

The antenna mast at top of the tower has come loose and is dangling over the railing. It should be secured immediately to avoid it falling off the tower altogether. Few antenna systems on the

tower have adequate hanger materials. Cable ties should be removed and proper hanger materials should be added to the antenna systems.

Small plants and roots are covering the base of the tower. Brush should be cleared from the tower if it starts impeding on tower members.

Warning signs need to be added to the tower, as well.

Dry Lake Beacon

The Dry Lake Beacon is in generally good condition. It has very clean equipment installations. The tower paint has faded and chipped away, but there is no corrosion visible. Tower members are thin gauge steel that can only with stand minimal weight on the horizontal bracing. The structure condition should be monitored annually and putting weight on the horizontal bracing during future installation should be avoided. Annual monitoring should be conducted to assess the condition of the finish and the concrete foundations. A Radio Frequency Warning sign should be installed.

11.0 Facility Costs

Table 11-1 summarizes the timing and budget implications of the maintenance recommendations provided by the consultants in this document. All costs are presented in 2019 dollars. Maintenance priorities in any given year are likely to change. The cost estimate is intended to present a big picture of maintenance costs over the next ten years and is not intended to be a strict schedule. Prioritizing improvements in any given year should be done with the input of the consultants involved.

The replacement of the Hangar E roof, estimated at $695,000, is recognized as a large project that exceeds the annual budget for all FMP improvements and maintenance. It is recommended that the Hangar E roof be replaced in 2022, but this project may be rescheduled as needed to meet budget constraints. The Hangar E roof replacement has been quantified individually in Table 11-1.

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Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

	Facility	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total
General Expenses		$ 15,311	$ 102,370	$ 41,450	$ 4,850	$ 4,850	$ 11,350	$ 5,350	$ 4,850	$ 4,850	$ 36,350	$ 231,581
1	Hangar 1	$ 7,900	$ 50,000	$ 500	$ 500	$ 63,161	$ 30,500	$ 500	$ 500	$ 500	$ 500	$ 154,561
2	Terminal Building	$ 13,110	$ 10,110	$ 10,110	$ 9,610	$ 19,384	$ 9,610	$ 9,610	$ 11,110	$ 11,110	$ 11,110	$ 114,874
3	Generator Building & Generator	$ 45,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 7,298	$ 1,500	$ 64,298
4	Airport Beacon	$ 24,000	$ 1,500	$ 6,548	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 39,048
5	Self Serve Tank	$ 20,500	$ 2,000	$ 2,000	$ 2,000	$ 15,177	$ 2,000	$ 2,000	$ 3,000	$ 3,000	$ 3,000	$ 54,677
6	WOB	$ 25,000	$ 7,245	$ 6,000	$ 6,745	$ 6,000	$ 6,745	$ 6,000	$ 6,745	$ 6,000	$ 6,745	$ 83,225
7	Maintenance Building	$ 32,045	$ 48,800	$ 4,545	$ 3,800	$ 4,545	$ 6,300	$ 4,545	$ 3,800	$ 59,949	$ 4,300	$ 172,629
8	Garage	$ 4,700	$ 750	$ 750	$ 500	$ 6,500	$ 1,300	$ 500	$ 750	$ 12,728	$ 500	$ 28,978
9	West Side Modular	$ 32,535	$ 13,740	$ 560	$ 560	$ 560	$ 960	$ 560	$ 560	$ 10,577	$ 560	$ 61,172
10	Fuel Farm	$ 43,000	$ 6,055	$ 82,340	$ 2,000	$ 37,369	$ 2,000	$ 10,822	$ 2,000	$ 2,000	$ 2,500	$ 190,085
11	Warehouse	$ 9,400	$ 212,000	$ 112,000	$ 344,000	$ 58,000	$ 22,300	$ 50,743	$ 2,000	$ 2,000	$ 2,000	$ 814,443
12	Phoenix Hangar	$ -	$ -	$ -	$ -	$ -	$ 75,000	$ -	$ -	$ 8,908	$ -	$ 83,908
13	EAA	$ 40,030	$ 720	$ 720	$ 720	$ 720	$ 1,720	$ -	$ -	$ -	$ -	$ 44,630
14	Air Traffic Control Tower	$ 2,000	$ 4,661	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 10,661
15	Hangar 1 Office	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 1,000	$ 1,000	$ 1,000	$ 6,500
16	Children's Playground	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Security Gates 4-7	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
A	Hangar Row A	$ 4,000	$ 1,000	$ 1,000	$ 31,000	$ 1,000	$ 151,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 193,000
B	Hangar Row B	$ 1,000	$ 250	$ 250	$ 30,500	$ 500	$ 250	$ 250	$ 500	$ 1,000	$ 500	$ 35,000
C	Hangar Row C	$ 1,500	$ 100,000	$ 1,500	$ 31,500	$ 1,500	$ 1,500	$ 151,500	$ 1,500	$ 93,153	$ 1,500	$ 385,153
D	Hangar Row D	$ 1,000	$ 250	$ 250	$ 30,500	$ 500	$ 250	$ 150,250	$ 500	$ 92,653	$ 500	$ 276,653
E	Hangar Row E	$ 8,000	$ 500	$ 500	$ 250	$ 98,903	$ 500	$ 500	$ 250	$ 250	$ 500	$ 110,153
F	Hangar Row F	$ 2,500	$ 500	$ 500	$ 250	$ 30,250	$ 150,500	$ 500	$ 250	$ 250	$ 500	$ 186,000
G	Hangar Row G	$ 2,500	$ 500	$ 500	$ 250	$ 30,250	$ 500	$ 500	$ 150,250	$ 250	$ 500	$ 186,000
H	Hangar Row H	$ 3,000	$ 500	$ 500	$ 250	$ 30,250	$ 500	$ 500	$ 100,250	$ 250	$ 500	$ 136,500
J	Hangar Row J	$ 2,500	$ 25,000	$ 47,260	$ 2,000	$ 2,000	$ 32,000	$ 2,500	$ 2,000	$ 2,000	$ 2,500	$ 119,760
K	Hangar Row K	$ 6,000	$ 1,500	$ 151,500	$ 1,000	$ 1,000	$ 30,500	$ 500	$ 500	$ 1,000	$ 1,000	$ 194,500
L	Hangar Row L	$ 3,300	$ 3,300	$ 80,300	$ 3,300	$ 3,300	$ 5,000	$ 3,300	$ 104,300	$ 4,300	$ 114,740	$ 325,140
M	Hangar Row M	$ 2,400	$ 1,800	$ 100,300	$ 1,800	$ 1,800	$ 3,800	$ 1,800	$ 151,800	$ 1,800	$ 73,841	$ 341,141
N	Hangar Row N	$ 127,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 147,450
P	Hangar Row P	$ 126,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 140,000
18	Alder Hill Beacon	$ 16,257	$ 24,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 48,257
19	Tahoe City Heli Pad	$ 10,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 23,500
20	Dry Lake Beacon	$ 10,709	$ 24,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 42,709
21	Bald Mountain Beacon	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 10,000
Total for All Facilities		$ 644,442	$ 651,295	$ 662,628	$ 519,630	$ 429,263	$ 557,830	$ 415,475	$ 560,660	$ 337,572	$ 277,391	$ 5,056,186
Fiscal Year Budget		$ 650,000	$ 669,500	$ 689,585	$ 710,273	$ 731,581	$ 753,528	$ 776,134	$ 799,418	$ 823,401	$ 848,103	$ 7,451,522
Variance		$ (5,558)	$ (18,205)	$ (26,958)	$ (190,643)	$ (302,317)	$ (195,698)	$ (360,659)	$ (238,758)	$ (485,829)	$ (570,712)	$ (2,395,336)
Large Projects[1]			$ 695,000									$ 695,000

[1] Large projects exceed the 2021 budget of $625,000 and are not included in the total cost estimate. Large projects should be individually assessed to determine an appropriate time for implementation.

[2] All costs are shown in 2019 dollars.

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General Expenses

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	Plumbing fixtures (toilets/sinks etc.)	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Natural gas lateral bracing	$ 1,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Civil Air Patrol											
	Electric Wall Heater	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Portable Electric Heater	$ 800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Unused ducts and fans	$ 1,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Total	$ 3,300	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ -
Electrical	AWOS	$ 2,000	$ 500	$ 500	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	
	Soar Truckee	$ 2,000	$ 500	$ 500	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	
	Ramp Lights	$ 500	$ 500	$ 10,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Total	$ 4,500	$ 1,500	$ 11,000	$ 1,000	$ 1,000	$ 1,500	$ 1,500	$ 1,000	$ 1,000	$ 1,500	$ -
Drainage	Drainage Assessment		$ 8,320									
	Repair Culverts 117 and 118		$ 4,000									
	Total	$ -	$ 12,320	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utilities	Clean sanitary sewer system with vacuum/hydroflush equipment	$ 4,161										
	Annual mapping updates	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	
	Annual Backflow Testing	$ 1,850	$ 1,850	$ 1,850	$ 1,850	$ 1,850	$ 1,850	$ 1,850	$ 1,850	$ 1,850	$ 1,850	
	Test sanitary sewer system		$ 50,000								$ 25,000	
	Water Master Plan		$ 22,700									
	Cross-Connection Control Survey		$ 6,000				$ 6,000				$ 6,000	
	Backflow Management Plan		$ 6,000									
	Utility Survey			$ 26,600								
	Total	$ 7,511	$ 88,050	$ 29,950	$ 3,350	$ 3,350	$ 9,350	$ 3,350	$ 3,350	$ 3,350	$ 34,350	$ -

	Total for All Disciplines	$ 15,311	$ 102,370	$ 41,450	$ 4,850	$ 4,850	$ 11,350	$ 5,350	$ 4,850	$ 4,850	$ 36,350	$ -

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Hangar 1 **Building No. 1**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
	Wall Panels											
	Repair snow damage						$ 30,000					
	Tightened panel fasteners	$ 5,000										
	Total	$ 5,000	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -
Coating	Unpainted Galvanized Steel Siding, Spot Repair and Overcoat - Galvanized Steel					$ 34,952						
	Steel Doors - Older Coating, Spot Repair and Overcoat - Steel					$ 8,322						
	Wood Surfaces, Spot Repair and Overcoat - Wood					$ 1,387						
	Total	$ -	$ -	$ -	$ -	$ 44,661	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	Unit Heaters	$ 1,500	$ -	$ -	$ -	$ 18,000	$ -	$ -	$ -	$ -	$ -	
	Unit Heater		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Water Heater	$ 400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Furnace	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Bath Exhaust Fan	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Shower											
	Total	$ 1,900	$ -	$ -	$ -	$ 18,000	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	New SE, new Lighting, new receptacles in work areas, and new door controls	$ 1,000	$50,000	$500	$500	$500	$500	$500	$500	$500	$500	
	Total	$ 1,000	$ 50,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 7,900	$ 50,000	$ 500	$ 500	$ 63,161	$ 30,500	$ 500	$ 500	$ 500	$ 500	$ -

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Administration Building **Building No. 2**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Touch-up painting, tightening screws and fasteners, roof inspection	$ 5,000										
	Total	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Structural Steel, Spot Repair and Overcoat - Steel or Remove and Replace					$ 7,000						
	Doors, Spot Repair and Overcoat					$ 2,774						
	Total	$ -	$ -	$ -	$ -	$ 9,774	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	Chiller	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Boilers	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Hot Water Storage Tank	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Solar Hot Water Heater	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Snowmelt System	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Fan Coils	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	
	Server Room Air Handler	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	
	Electric Wall Heater	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Ceiling Mounted Exhaust Fans	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Grease Fan	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	
	Inline Fans	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Inline Pumps	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	HVAC Plant accessories	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Grills, Diffusers, Louvers	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	DDC system	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Fire Suppression System	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Computer Fire Suppression	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	
	Kitchen Fire Suppression	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	
	Total	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ 7,450	$ -
Electrical	General maintenance	$ -	$2,000	$2,000	$1,500	$1,500	$1,500	$1,500	$3,000	$3,000	$3,000	
	Total	$ -	$ 2,000	$ 2,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 3,000	$ 3,000	$ 3,000	$ -

Administration Building Continued **Building No. 2**

Utilities	Pump grease trap	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	
	Total	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ 660	$ -

	Total for All Disciplines	$ 13,110	$ 10,110	$ 10,110	$ 9,610	$ 19,384	$ 9,610	$ 9,610	$ 11,110	$ 11,110	$ 11,110	$ -

Generator Building and Generator **Building No. 3**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Fix fasteners and protective coating	$ 5,000										
	Total	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Siding inside fence, Spot Repair and Overcoat - Siding and Doors									$ 2,774		
	Siding outside fence, Spot Repair and Overcoat - Steel									$ 3,024		
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,798	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	New NG Generator	$ 40,000	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	
	Total	$ 40,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 45,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 7,298	$ 1,500	$ -

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Airport Beacon **Building No. 4**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Update electrical installation as required; new raceways, conductors, and redesign for working space	$ 24,000	$1,500	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
	Total	$ 24,000	$ 1,500	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tower	Paint structure			$ 5,548								
	Total	$ -	$ -	$ 5,548	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 24,000	$ 1,500	$ 6,548	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -

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Self Serve Tank **Building No. 5**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Tighten loose bolts at southwest foot	$ 500										
	Total	$ 500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Steel Tank, Pump Enclosures, Electrical Box, Spot Repair and Overcoat - Steel					$ 4,855						
	Roll-Up Door, Spot Repair and Overcoat - Steel					$ 8,322						
	Total	$ -	$ -	$ -	$ -	$ 13,177	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Update to meet current NEC	$ 20,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$3,000	$3,000	$3,000	
	Total	$ 20,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 3,000	$ 3,000	$ 3,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 20,500	$ 2,000	$ 2,000	$ 2,000	$ 15,177	$ 2,000	$ 2,000	$ 3,000	$ 3,000	$ 3,000	$ -

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WOB **Building No. 6**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	Chiller	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	
	Boilers	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	$ 300	
	Indirect Water Heater	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Snowmelt System	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Fan Coils & Hydronic Heaters	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	
	Server Room Air Handler											
	Ceiling Mounted Exhaust Fans	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Relief Fan	$ 2,200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	
	Inline Pumps	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	HVAC Plant accessories	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Grills, Diffusers, Louvers	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	
	Controls System	$ 15,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Fire Suppression System	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	Total	$ 22,000	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ -
Electrical	Address small issues. Test 1200 amp main breaker ground fault system	$ 3,000.00	$1,000	$500	$500	$500	$500	$500	$500	$500	$500	
	Total	$ 3,000	$ 1,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ -
Utilities	Pump S/O separator	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -
	Total	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -

	Total for All Disciplines	$ 25,000	$ 7,245	$ 6,000	$ 6,745	$ 6,000	$ 6,745	$ 6,000	$ 6,745	$ 6,000	$ 6,745	$ -

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Maintenance Building **Building No. 7**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating		$ 45,000									
	Repair and replace damaged members, tighten fasteners	$ 1,000										
	Total	$ 1,000	$ 45,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Siding and Roll-up Doors, Spot repair and overcoat- siding and doors									$ 54,904		
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 54,904	$ -	$ -
Mechanical	Water Heater	$ 2,500	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Furnace	$ 15,000	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	
	Radiant Heaters	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	
	Radiant Heaters	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Ceiling Fans	$ -	$ -	$ -	$ -	$ -	$ 2,500	$ -	$ -	$ -	$ -	
	Ceiling Fans	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Bathroom Exhaust Fans	$ 1,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	South Bay Exhaust Fan	$ 1,000	$ 50	$ 50	$ 50	$ 50	$ 50	$ 50	$ 50	$ 50	$ 50	
	Addition Exhaust Fan	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Vehicle Exhaust Fans	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Fire Suppression	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Grease interceptor	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	
	CO and cobustible gas auto exhaustfor North Bay	$ 5,000	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
	Insulation	$ 300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Total	$ 27,300	$ 2,300	$ 2,300	$ 2,300	$ 2,300	$ 4,800	$ 2,300	$ 2,300	$ 2,300	$ 2,300	$ -
Electrica	Update to meet current NEC	$ 3,000	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$2,000	$2,000	
	Total	$ 3,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 2,000	$ 2,000	$ -
Utilities	Pump S/O separator	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	
	Total	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ 745	$ -	$ -

	Total for All Disciplines	$ 32,045	$ 48,800	$ 4,545	$ 3,800	$ 4,545	$ 6,300	$ 4,545	$ 3,800	$ 59,949	$ 4,300	$ -

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Garage **Building No. 8**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Fix fasteners, repair leaks, repair and replace damaged members	$ 3,000										
	Total	$ 3,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Siding and Doors- Original Paint, Spot repair and overcoat - siding and doors									$ 12,228		
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,228	$ -	$ -
Mechanical	Unit Heater	$ 800	$ -	$ -	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	
	Water Heater	$ 50	$ -	$ -	$ -	$ -	$ 600	$ -	$ -	$ -	$ -	
	Bath Exhaust Fan	$ -	$ -	$ -	$ -	$ -	$ 200	$ -	$ -	$ -	$ -	
	Abbandonded Wall heater	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Total	$ 950	$ -	$ -	$ -	$ 6,000	$ 800	$ -	$ -	$ -	$ -	$ -
Electrical	Regular maintenace	$ 750	$750	$750	$500	$500	$500	$500	$750	$500	$500	
	Total	$ 750	$ 750	$ 750	$ 500	$ 500	$ 500	$ 500	$ 750	$ 500	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 4,700	$ 750	$ 750	$ 500	$ 6,500	$ 1,300	$ 500	$ 750	$ 12,728	$ 500	$ -

West Side Modular (CARE Flight Offices) **Building No. 9**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coatings	$ 10,835										
	Fix fasteners, repair leaks, repair and replace deck piers	$ 10,000										
	Total	$ 20,835	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Spot repair and overcoat- wood									$ 10,017		
	Replace, prime and paint		$ 13,180									
	Total	$ -	$ 13,180	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,017	$ -	$ -
Mechanical	Cooktop Exhaust Fan											$ 400
	Water Heater	$ 200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000
	Furnace	$ 6,000	$ 60	$ 60	$ 60	$ 60	$ 60	$ 60	$ 60	$ 60	$ 60	$ 300
	Air conditioning	$ 4,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 500
	Bath Exhaust Fan	$ -	$ -	$ -	$ -	$ -	$ 400	$ -	$ -	$ -	$ -	$ -
	Total	$ 10,200	$ 60	$ 60	$ 60	$ 60	$ 460	$ 60	$ 60	$ 60	$ 60	$ 4,200
Electrical	Augmented grounding, insulated bushings, MC cable support, GFCI receptacles	$ 1,500	$500	$500	$500	$500	$500	$500	$500	$500	$500	
	Total	$ 1,500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 32,535	$ 13,740	$ 560	$ 560	$ 560	$ 960	$ 560	$ 560	$ 10,577	$ 560	$ 4,200

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Fuel Farm **Building No. 10**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coatings	$ 10,000										
	Fix fasteners, repair leaks	$ 3,000										
	Total	$ 13,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Structural Members and Roof Rafters, Remove and Replace			$ 81,140								
	Seismic Rods, Remove and Replace											
	Tank 1, Remove and Replace					$ 8,322						
	Tank 2, Remove and Replace					$ 8,322						
	Tank 3, Remove and Replace					$ 8,322						
	Diesel Tank, Remove and Replace					$ 8,322						
	Pump Station, Spot Repair and Overcoat - Steel					$ 2,081						
	Stairways and Tank Access Walkways, Remove and Replace		$ 4,855									
	Concrete Tanks, Spot Repair and Overcoat - Concrete							$ 8,322				
	Total	$ -	$ 4,855	$ 81,140	$ -	$ 35,369	$ -	$ 8,322	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Update to meet current NEC	$ 30,000	$1,200	$1,200	$2,000	$2,000	$2,000	$2,500	$2,000	$2,000	$2,500	
	Total	$ 30,000	$ 1,200	$ 1,200	$ 2,000	$ 2,000	$ 2,000	$ 2,500	$ 2,000	$ 2,000	$ 2,500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 43,000	$ 6,055	$ 82,340	$ 2,000	$ 37,369	$ 2,000	$ 10,822	$ 2,000	$ 2,000	$ 2,500	$ -

Warehouse **Building No. 11**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Architectural	Automatic Fire Sprinkler System		$ 175,000									
	Updated Non-Rated North Wall Fire System			$ 75,000								
	Commodity Classification Analysis			$ 10,000								
	Fuel Storage Facility Analysis			$ 5,000								
	Entrance and Exit Door Accessibility				$ 10,000							
	Upgrade restroom				$ 3,000							
	Accessible Parking and Path				$ 3,000							
	Total	$ -	$ 175,000	$ 90,000	$ 16,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Structural	Roof Coatings/Replace roof panels				$ 300,000							
	Wall panel protection		$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000					
	Total	$ -	$ 20,000	$ 20,000	$ 320,000	$ 20,000	$ 20,000	$ -	$ -	$ -	$ -	$ -
Coating	Siding , Spot Repair and Overcoat - Siding and Doors							$ 43,750				
	Entrance Enclosures, Spot Repair and Overcoat - Steel		$ 10,000									
	Doors and Frames, Spot Repair and Overcoat - Siding and Doors							$ 4,993				
	Total	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ 48,743	$ -	$ -	$ -	$ -
Mechanical	**Warehouse A**											
	Unit Heaters	$ 800	$ -	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	$ -	
	Exaust fan	$ 300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Warehouse B											
	Unit Heater	$ 1,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Warehouse C											
	Unit Heaters	$ 800	$ -	$ -	$ -	$ 12,000	$ -	$ -	$ -	$ -	$ -	
	Warehouse D											
	Unit Heater-non operating?	$ 800	$ -	$ -	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	
	Unit Heater operating	$ 800	$ -	$ -	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	
	Warehouse E1											
	Unit Heater	$ 800	$ -	$ -	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	
	Warehouse E3											
	Unit Heater	$ 800	$ -	$ -	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	

Warehouse Continued **Building No. 11**

Mechanical	Exhaust Fan	$ 300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Warehouse Bathroom											
	Wall Heater	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Water Heater	$ 600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Exhaust Fan						$ 300					
	Total	$ 7,400	$ -	$ -	$ 6,000	$ 36,000	$ 300	$ -	$ -	$ -	$ -	$ 11
Electrical	Fix service entrance and feeders. Address tenant-specific issues.	$ 2,000	$ 7,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	
	Total	$ 2,000	$ 7,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 9,400	$ 212,000	$ 112,000	$ 344,000	$ 58,000	$ 22,300	$ 50,743	$ 2,000	$ 2,000	$ 2,000	$ 11

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Phoenix Hangar **Building No. 12**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Replace roof panels, Protect wall panels, repair and replace fasteners						$ 75,000					
	Total	$ -	$ -	$ -	$ -	$ -	$ 75,000	$ -	$ -	$ -	$ -	$ -
Coating	Siding and Aluminum Door , Spot Repair and Overcoat - Siding and Doors									$ 8,908		
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,908	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ -	$ -	$ -	$ -	$ -	$ 75,000	$ -	$ -	$ 8,908	$ -	$ -

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EAA **Building No. 13**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating	$ 24,570										
	Remove building						Unknown					
	Total	$ 24,570	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Wood Siding , Replace Heavily Cracked Siding Prime and Paint Spot Repair and Overcoat - Wood		Tenant Responsibility									
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	Exhaust Fan	$ 10,000	$ 100	$ 100	$ 100	$ 100	$ 100					
	Furnace	$ 260	$ 60	$ 60	$ 60	$ 60	$ 60					
	Water Heater	$ -	$ -	$ -	$ -	$ -	$ -					
	Domestic Range Hood	$ -	$ -	$ -	$ -	$ -	$ -					
	Wall Furnace	$ 500	$ -	$ -	$ -	$ -	$ -					
	Bath Exhaust Fan	$ 200	$ -	$ -	$ -	$ -	$ -					
	Exhaust hood and Fan	$ -	$ -	$ -	$ -	$ -	$ -					
	Furnace- Likely same as other EAA furnace	$ 500	$ 60	$ 60	$ 60	$ 60	$ 60					
	Total	$ 11,460	$ 220	$ 220	$ 220	$ 220	$ 220	$ -	$ -	$ -	$ -	$ -
Electrical	Update to meet current NEC	$ 4,000	$500	$500	$500	$500	$500					
	Total	$ 4,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ -	$ -	$ -	$ -	$ -
Utilities	Pump and abandon septic tank						$ 1,000					
	Total	$ -	$ -	$ -	$ -	$ -	$ 1,000	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 40,030	$ 720	$ 720	$ 720	$ 720	$ 1,720	$ -	$ -	$ -	$ -	$ -

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Air Traffic Control Tower **Building No. 14**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	Steel Surfaces, Spot Repair - Steel		$ 4,161									
	Total	$ -	$ 4,161	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Fix ground/lightning protection conductors installation	$ 2,000	$500	$500	$500	$500	$500	$500	$500	$500	$500	
	Total	$ 2,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 2,000	$ 4,661	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ -

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Hangar 1 Office **Building No. 15**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	General maintenance	$ 500	$500	$500	$500	$500	$500	$500	$1,000	$1,000	$1,000	
	Total	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 1,000	$ 1,000	$ 1,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 1,000	$ 1,000	$ 1,000	$ -

Children's Playground **Building No. 16**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Security Gates 4-7 **Building No. 17**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Electrical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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Hangar Row A **Building No. A**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating						$ 150,000					
	Repair or replace wall panels				$ 30,000							
	Total	$ -	$ -	$ -	$ 30,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Repair service entrance damaged by water. Additional grounding. Repair/replace unauthorized, non-compliant tenant-installed work within the individual hangars	$ 4,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
	Total	$ 4,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 4,000	$ 1,000	$ 1,000	$ 31,000	$ 1,000	$ 151,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -

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Hangar Row B **Building No. B**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Repair or replace wall panels				$ 30,000							
	Total	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Repair service entrance damaged by water. Additional grounding. Repair/replace unauthorized, non-compliant tenant-installed work within the individual hangars	$ 1,000	$250	$250	$500	$500	$250	$250	$500	$1,000	$500	
	Total	$ 1,000	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	$ 1,000	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 1,000	$ 250	$ 250	$ 30,500	$ 500	$ 250	$ 250	$ 500	$ 1,000	$ 500	$ -

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Hangar Row C **Building No. C**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating							$ 150,000				
	Repair or replace wall panels				$ 30,000							
	Total	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ -
Coating	Siding & Textured Aluminum Doors- Original Paint, Spot Repair and Overcoat - Siding and Doors									$ 91,653		
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 91,653	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Replace electrical systems	$1,500	$ 100,000	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	
	Total	$ 1,500	$ 100,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 1,500	$ 100,000	$ 1,500	$ 31,500	$ 1,500	$ 1,500	$ 151,500	$ 1,500	$ 93,153	$ 1,500	$ -

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Hangar Row D **Building No. D**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating							$ 150,000				
	Repair or replace wall panels				$ 30,000							
	Total	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ -
Coating	Siding & Textured Aluminum Doors- Original Paint, Spot Repair and Overcoat - Siding and Doors									$ 91,653		
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 91,653	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Repair service entrance damaged by water. Additional grounding. Repair/replace unauthorized, non-compliant tenant-installed work within the individual hangars	$ 1,000	$250	$250	$500	$500	$250	$250	$500	$1,000	$500	
	Total	$ 1,000	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	$ 1,000	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 1,000	$ 250	$ 250	$ 30,500	$ 500	$ 250	$ 150,250	$ 500	$ 92,653	$ 500	$ -

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Hangar Row E **Building No. E**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Replace Roof[1]		$ 695,000									
	Repair or replace wall panels				$ 30,000							
	Total	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Large Project Total[1]		$ 695,000									
Coating	Siding , Spot Repair and Overcoat - Siding and Doors					$ 91,653						
	Electrical Equipment Canopy, Spot Repair and Overcoat - Steel					$ 7,000						
	Total	$ -	$ -	$ -	$ -	$ 98,653	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Reconfigure service entrance installation of manual transfer switch. Replace ice damaged components. Repair/replace tenant-installed electrical/lighting that are not compliant with codes and standards.	$ 8,000	$500	$500	$250	$250	$500	$500	$250	$250	$500	
	Total	$ 8,000	$ 500	$ 500	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 8,000	$ 500	$ 500	$ 250	$ 98,903	$ 500	$ 500	$ 250	$ 250	$ 500	$ -

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Hangar Row F **Building No. F**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating						$ 150,000					
	Repair or replace wall panels					$ 30,000						
	Total	$ -	$ -	$ -	$ -	$ 30,000	$ 150,000	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Reconfigure service entrance equipment and transfer switch. Repair damage from the non-watertight fitting at the top of the load center (typical for all of the lighting installed on the North ends of the hangars).	$ 2,500	$500	$500	$250	$250	$500	$500	$250	$250	$500	
	Total	$ 2,500	$ 500	$ 500	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 2,500	$ 500	$ 500	$ 250	$ 30,250	$ 150,500	$ 500	$ 250	$ 250	$ 500	$ -

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Hangar Row G **Building No. G**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating								$ 150,000			
	Repair or replace wall panels					$ 30,000						
	Total	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ 150,000	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Reconfigure service entrance equipment and transfer switch. Repair damage from the non-watertight fitting at the top of the load center (typical for all of the lighting installed on the North ends of the hangars).	$ 2,500	$500	$500	$250	$250	$500	$500	$250	$250	$500	
	Total	$ 2,500	$ 500	$ 500	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 2,500	$ 500	$ 500	$ 250	$ 30,250	$ 500	$ 500	$ 150,250	$ 250	$ 500	$ -

Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

Hangar Row H **Building No. H**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating								$ 100,000			
	Repair or replace wall panels					$ 30,000						
	Total	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ 100,000	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Reconfigure service entrance equipment and transfer switch. Repair damage from the non-watertight fitting at the top of the load center (typical for all of the lighting installed on the North ends of the hangars).	$ 3,000	$500	$500	$250	$250	$500	$500	$250	$250	$500	
	Total	$ 3,000	$ 500	$ 500	$ 250	$ 250	$ 500	$ 500	$ 250	$ 250	$ 500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 3,000	$ 500	$ 500	$ 250	$ 30,250	$ 500	$ 500	$ 100,250	$ 250	$ 500	$ -

Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

Hangar Row J **Building No. J**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating			$ 45,760								
	Repair or replace wall panels, new anchor bolt epoxy-set						$ 30,000					
	Total	$ -	$ -	$ 45,760	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Rewire to meet current NEC.	$ 2,500	$25,000	$1,500	$2,000	$2,000	$2,000	$2,500	$2,000	$2,000	$2,500	
	Total	$ 2,500	$ 25,000	$ 1,500	$ 2,000	$ 2,000	$ 2,000	$ 2,500	$ 2,000	$ 2,000	$ 2,500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 2,500	$ 25,000	$ 47,260	$ 2,000	$ 2,000	$ 32,000	$ 2,500	$ 2,000	$ 2,000	$ 2,500	$ -

Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

Hangar Row K **Building No. K**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof coating or replace existing roof			$ 150,000								
	Repair or replace wall panels, new anchor bolt epoxy-set						$ 30,000					
	Total	$ -	$ -	$ 150,000	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Recofnigure service entrance equipment and the added manual transfer switch. Fix tenant-installed electrical within the hangars	$ 6,000	$1,500	$1,500	$1,000	$1,000	$500	$500	$500	$1,000	$1,000	
	Total	$ 6,000	$ 1,500	$ 1,500	$ 1,000	$ 1,000	$ 500	$ 500	$ 500	$ 1,000	$ 1,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 6,000	$ 1,500	$ 151,500	$ 1,000	$ 1,000	$ 30,500	$ 500	$ 500	$ 1,000	$ 1,000	$ -

Facilities Maintenance Plan
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Hangar Row L **Building No. L**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Repair or replace wall panels, fix fasteners, repair leaks								$ 100,000			
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -
Coating	Siding and Doors , Spot Repair and Overcoat - Siding and Doors										$ 110,440	
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 110,440	$ -
Mechanical	Unit Heater	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Dry Fire Suppression	$ 300	$ 300	$ 300	$ 300	$ 300	$ 2,000	$ 300	$ 300	$ 300	$ 300	
	Total	$ 300	$ 300	$ 300	$ 300	$ 300	$ 2,000	$ 300	$ 300	$ 300	$ 300	$ -
Electrical	Rewire to meet current NEC.	$3,000	$3,000	$ 80,000	$3,000	$3,000	$3,000	$3,000	$4,000	$4,000	$4,000	
	Total	$ 3,000	$ 3,000	$ 80,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 4,000	$ 4,000	$ 4,000	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 3,300	$ 3,300	$ 80,300	$ 3,300	$ 3,300	$ 5,000	$ 3,300	$ 104,300	$ 4,300	$ 114,740	$ -

Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

Hangar Row M **Building No. M**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	Roof Coating or Replace Panels, Tighten fasteners, Repair leaks								$ 150,000			
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -	$ -	$ -
Coating	Siding and Doors, Spot Repair and Overcoat - Siding and Doors										$ 72,041	
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,041	$ -
Mechanical	Dry Fire Suppression	$ 300	$ 300	$ 300	$ 300	$ 300	$ 2,000	$ 300	$ 300	$ 300	$ 300	
	Unit Heater	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Water Heater	$ 600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Exhaust Fan	$ -	$ -	$ -	$ -	$ -	$ 300	$ -	$ -	$ -	$ -	
	Total	$ 900	$ 300	$ 300	$ 300	$ 300	$ 2,300	$ 300	$ 300	$ 300	$ 300	$ -
Electrical	Rewire to meet curent NEC.	$ 1,500	$1,500	$ 100,000	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	
	Total	$ 1,500	$ 1,500	$ 100,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -
Utilities	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 2,400	$ 1,800	$ 100,300	$ 1,800	$ 1,800	$ 3,800	$ 1,800	$ 151,800	$ 1,800	$ 73,841	$ -

Facilities Maintenance Plan
Truckee Tahoe Airport District
October 2020 - FINAL

Hangar Row N **Building No. N**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Regular maintenance and updates to electrical systems	$ 1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	
	Total	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -
Utilities	Upgrade fire sprinkler system	$ 125,000										
	Pump S/O separator	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	
	Total	$ 125,745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ 745	$ -

	Total for All Disciplines	$ 127,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ 2,245	$ -

Hangar Row P **Building No. P**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Structural	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Coating	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanical	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Electrical	Regular maintenance and updates to electrical systems	$ 1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	
	Total	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -
Utilities	Upgrade fire sprinkler system	$ 125,000										
	Total	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 126,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -

Alder Hill Beacon **Building No. 18**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Electrical	Update equipment. Fix poor installation and working space issues	$1,000	$ 24,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
	Total	$ 1,000	$ 24,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -
Tower	Engineered Tower Analysis			Unknown								
	Install Safety Equipment (add cable climb, replace platforms install warning signs)	$ 1,387										
	Paint structure	$ 9,709										
	Correct installations	$ 4,161										
	Total	$ 15,257	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 16,257	$ 24,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -

Tahoe City Helipad **Building No. 19**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Electrical	LED landing lights are broken. Repair should include reconfiguration to make them less vulnerable.	$ 10,000	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	
	Total	$ 10,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -

	Total for All Disciplines	$ 10,000	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ -

Dry Lake Beacon **Building No. 20**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Electrical	Update equipment. Fix poor installation and working space issues	$ 1,000	$24,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
	Total	$ 1,000	$ 24,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -
Tower	Paint structure	$ 8,322										
	Install RF warning sign	$ 1,387										
	Total	$ 9,709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 10,709	$ 24,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -

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Bald Mountain Beacon **Building No. 21**

	Maintenance Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Beyond
Electrical	Updates	$ 1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
	Total	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -
Tower	None											
	Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

	Total for All Disciplines	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ -

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Appendix A

Truckee Tahoe Airport District

Map Book

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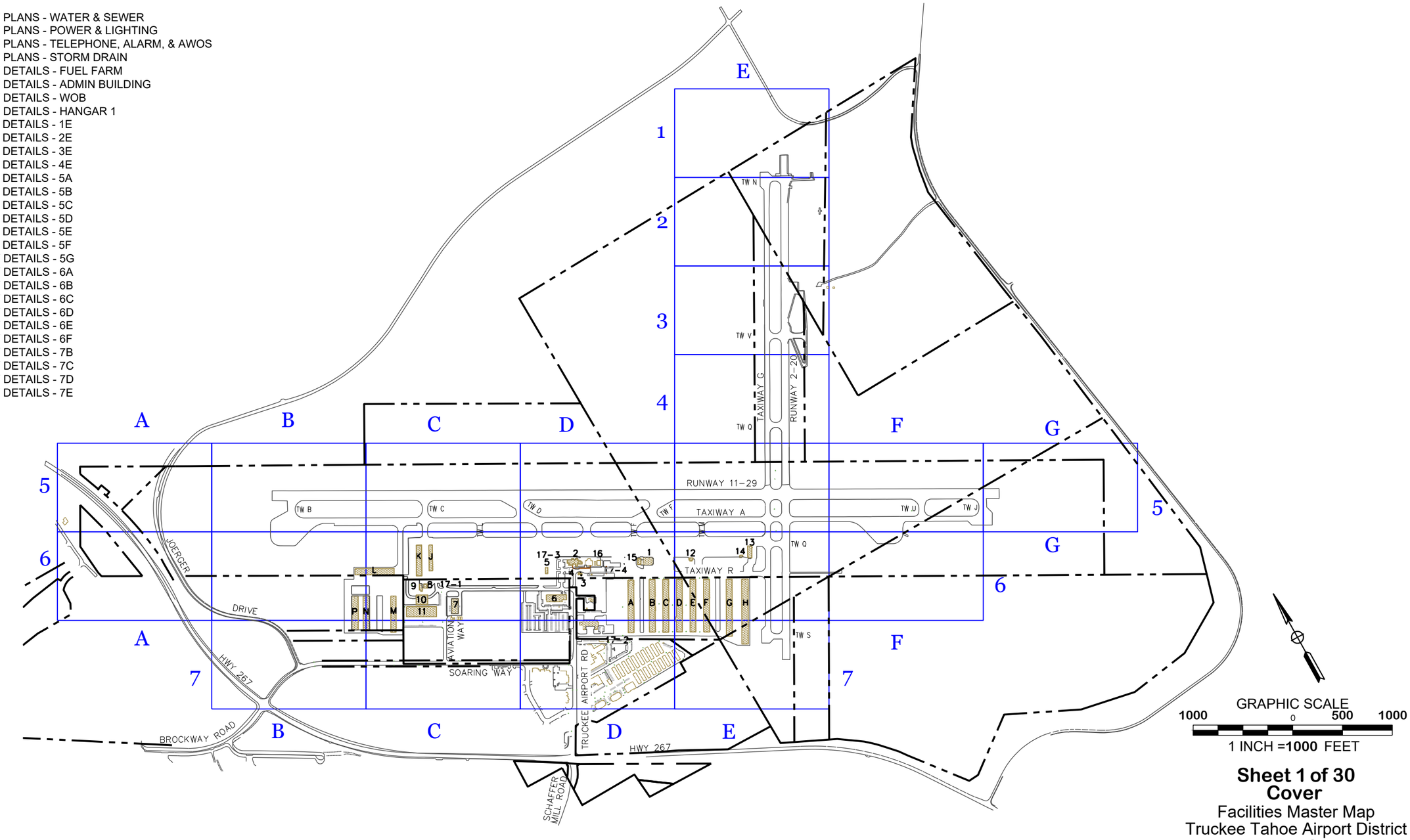
TRUCKEE TAHOE AIRPORT DISTRICT FACILITIES MASTER MAP

TRUCKEE, NEVADA COUNTY, CALIFORNIA

INDEX



Sheet 1 of 30
Cover
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

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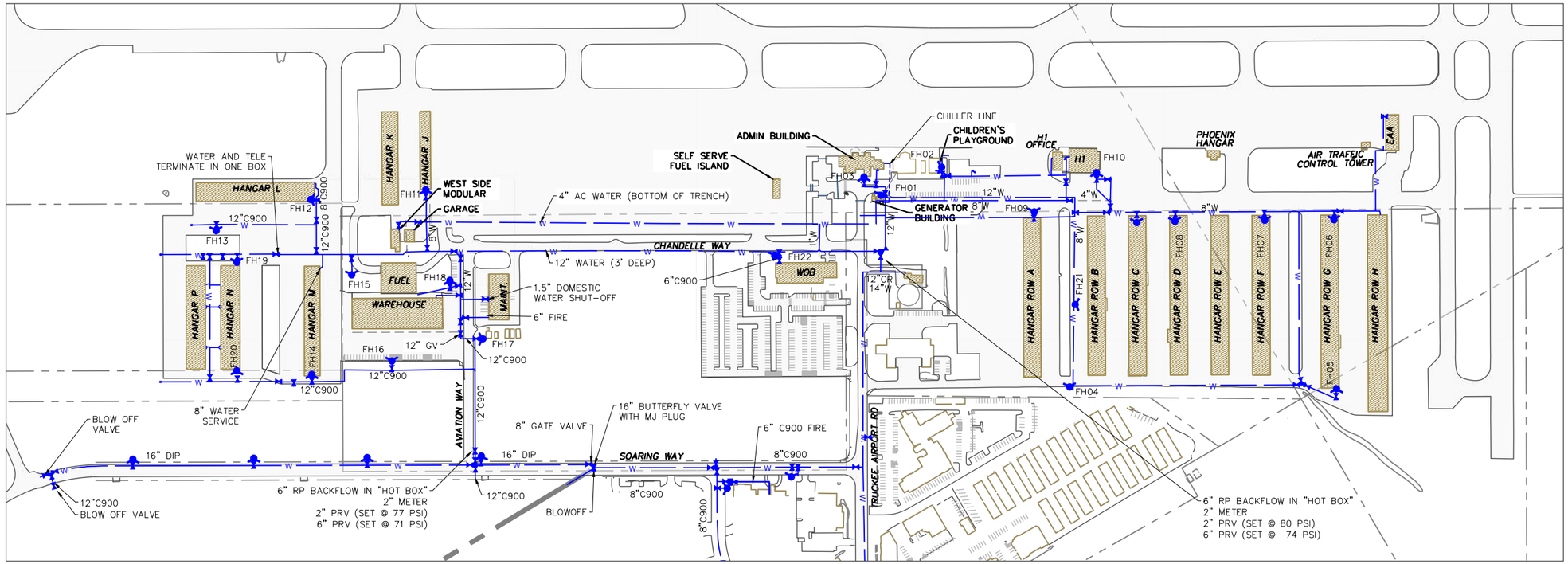
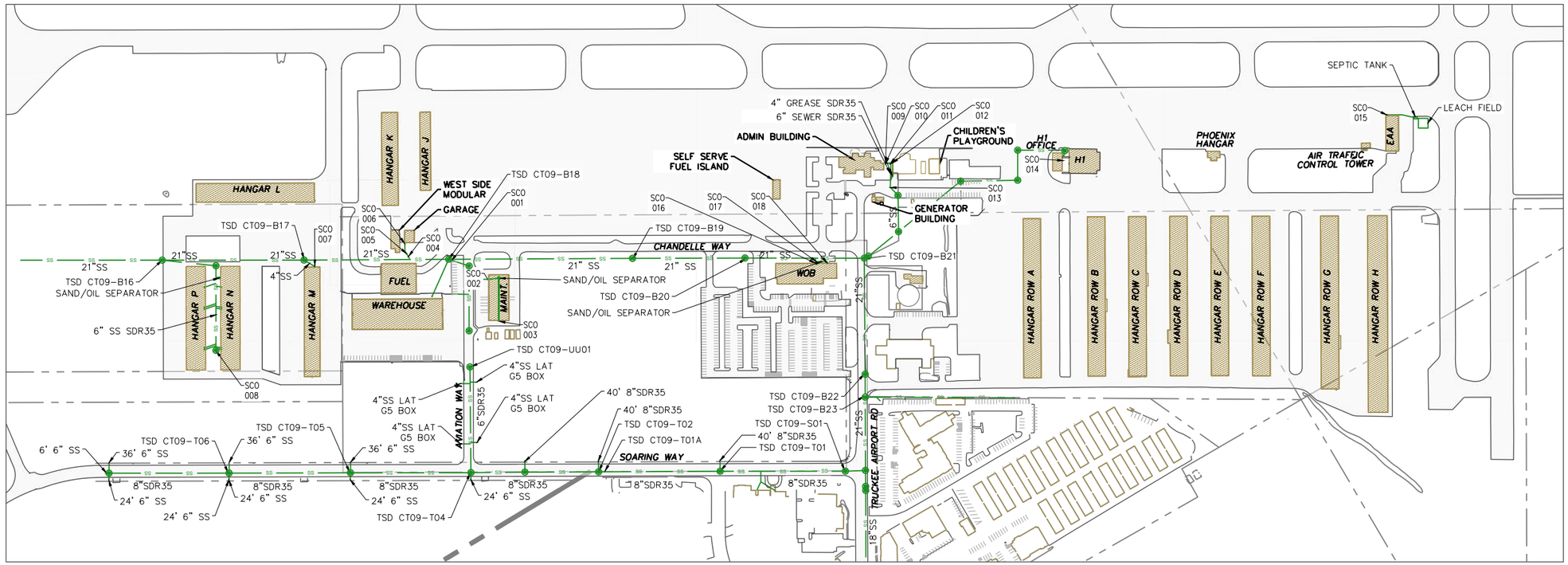
WATER SYSTEM SCHEMATIC



SANITARY SEWER SYSTEM SCHEMATIC



LEGEND

- HYDRANT
- VALVE
- MANHOLE
- PROPERTY LINE
- W — WATER PIPE
- SS — SEWER PIPE

ABBREVIATIONS

AC	ASBESTOS CEMENT
DIP	DUCTILE IRON PIPE
GV	GATE VALVE
PRV	PRESSURE REDUCING VALVE
FH	FIRE HYDRANT
MJ	MECHANICAL JOINT
RP	REDUCED PRESSURE
SCO	SEWER CLEANOUT
TELE	TELECOMMUNICATIONS
TSD	TRUCKEE SANITARY DISTRICT
SS	SANITARY SEWER

Not To Scale

Sheet 2 of 30
Water & Sewer Schematic
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

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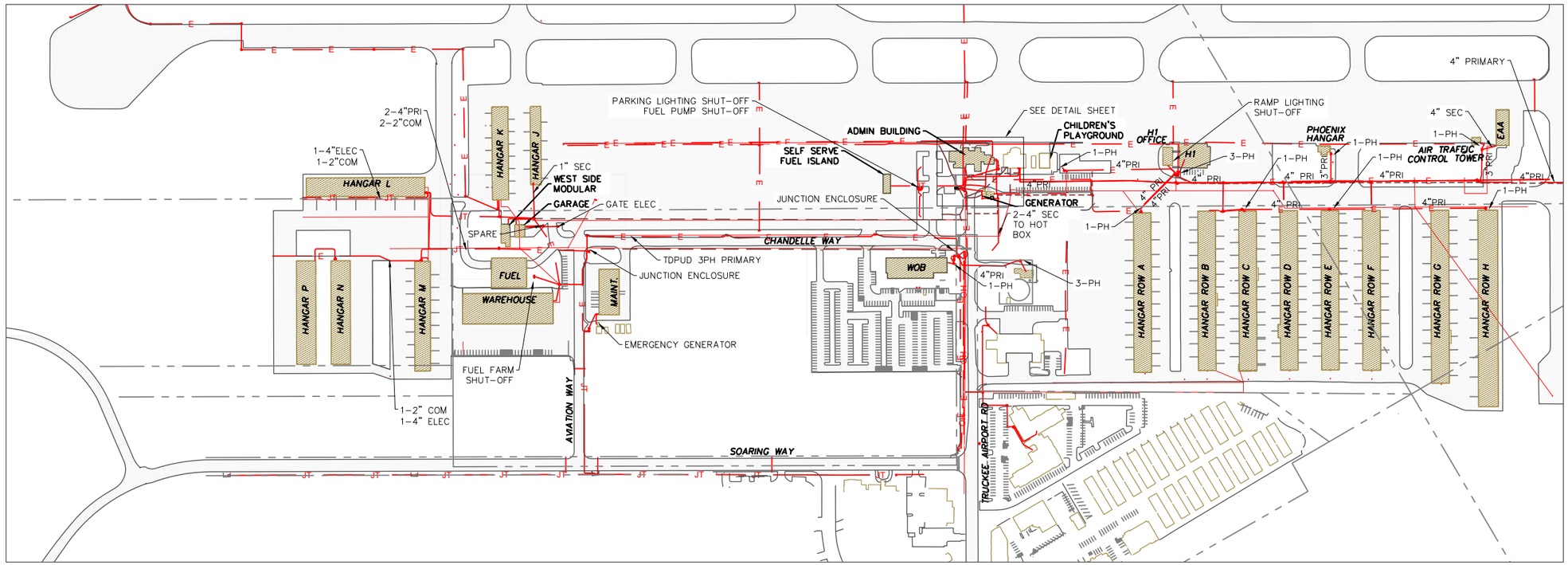
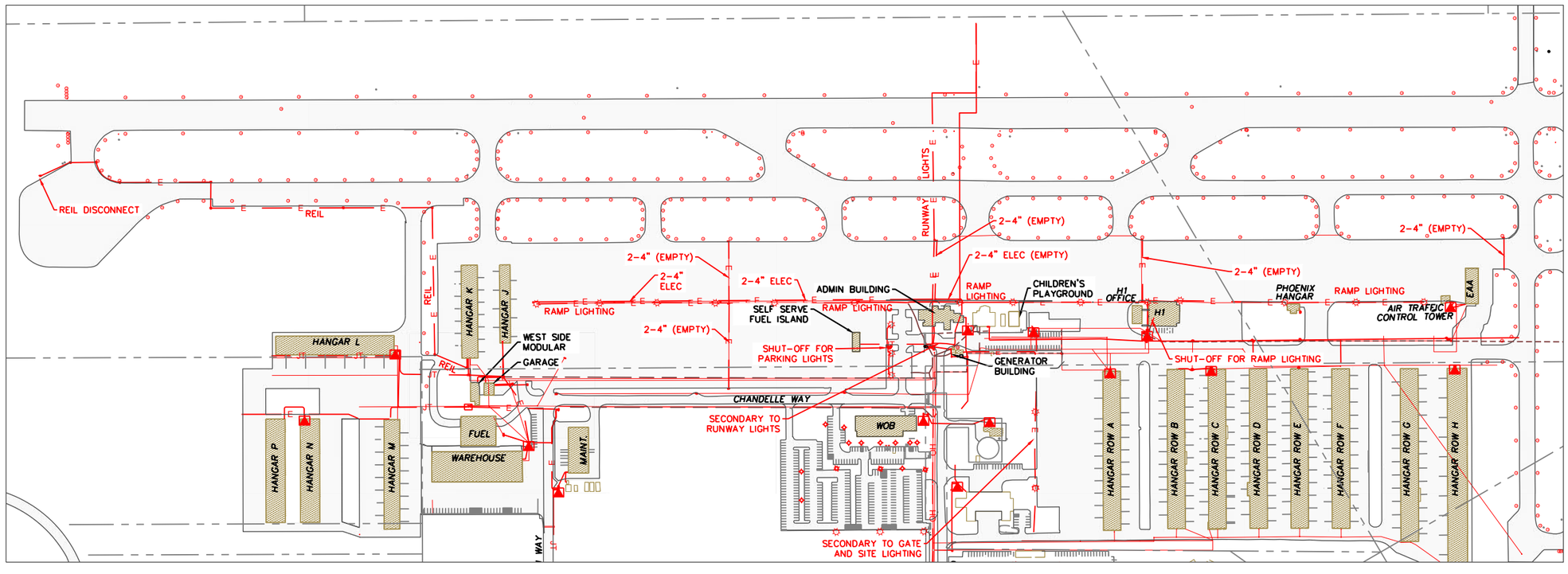
POWER SCHEMATIC



LEGEND

- LIGHT
- ELECTRIC TRANSFORMER
- ELECTRIC CONDUIT
- PROPERTY LINE

LIGHTING SCHEMATIC



ABBREVIATIONS

ELEC	ELECTRIC
PRI	PRIMARY ELECTRIC
REIL	RUNWAY END INDENTIFIER LIGHT
SEC	SECONDARY ELECTRIC
1-PH	SINGLE PHASE
3-PH	THREE-PHASE

Not To Scale

Sheet 3 of 30
Power & Lighting Schematic
Facilities Master Map
Truckee Tahoe Airport District
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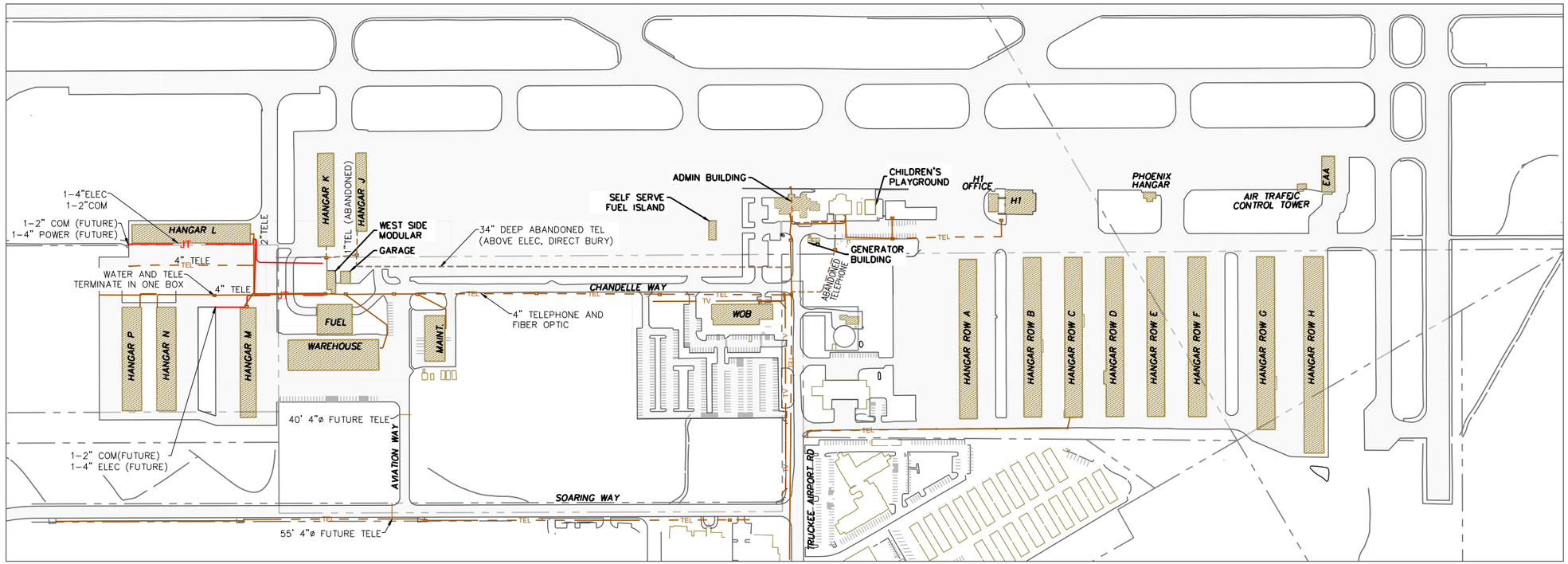
TELEPHONE AND FIBER OPTIC



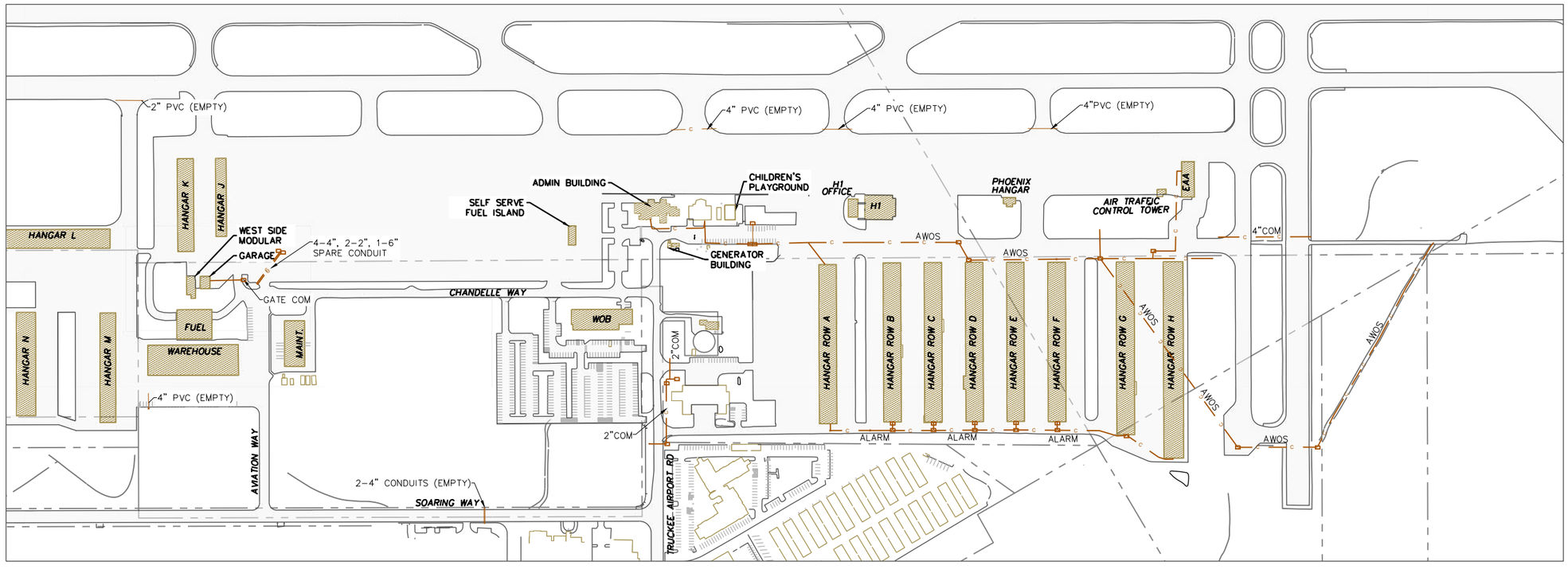
LEGEND

- TEL — TELEPHONE CONDUIT
- C — C — COMMUNICATIONS/ALARM
- TV — CABLE TELEVISION
- JT — JT — JOINT TRENCH TELEPHONE/ ELECTRICAL
- TELEPHONE/ COM/ TV PULL BOX
- PROPERTY LINE

ABBREVIATIONS

COM	COMMUNICATIONS
TV	CABLE TELEVISION
TEL	TELEPHONE (AT&T)
AWOS	AUTOMATED WEATHER OBSERVATION SYSTEM

ALARM AND AWOS SCHEMATIC



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Telephone, Alarm, & AWOS
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

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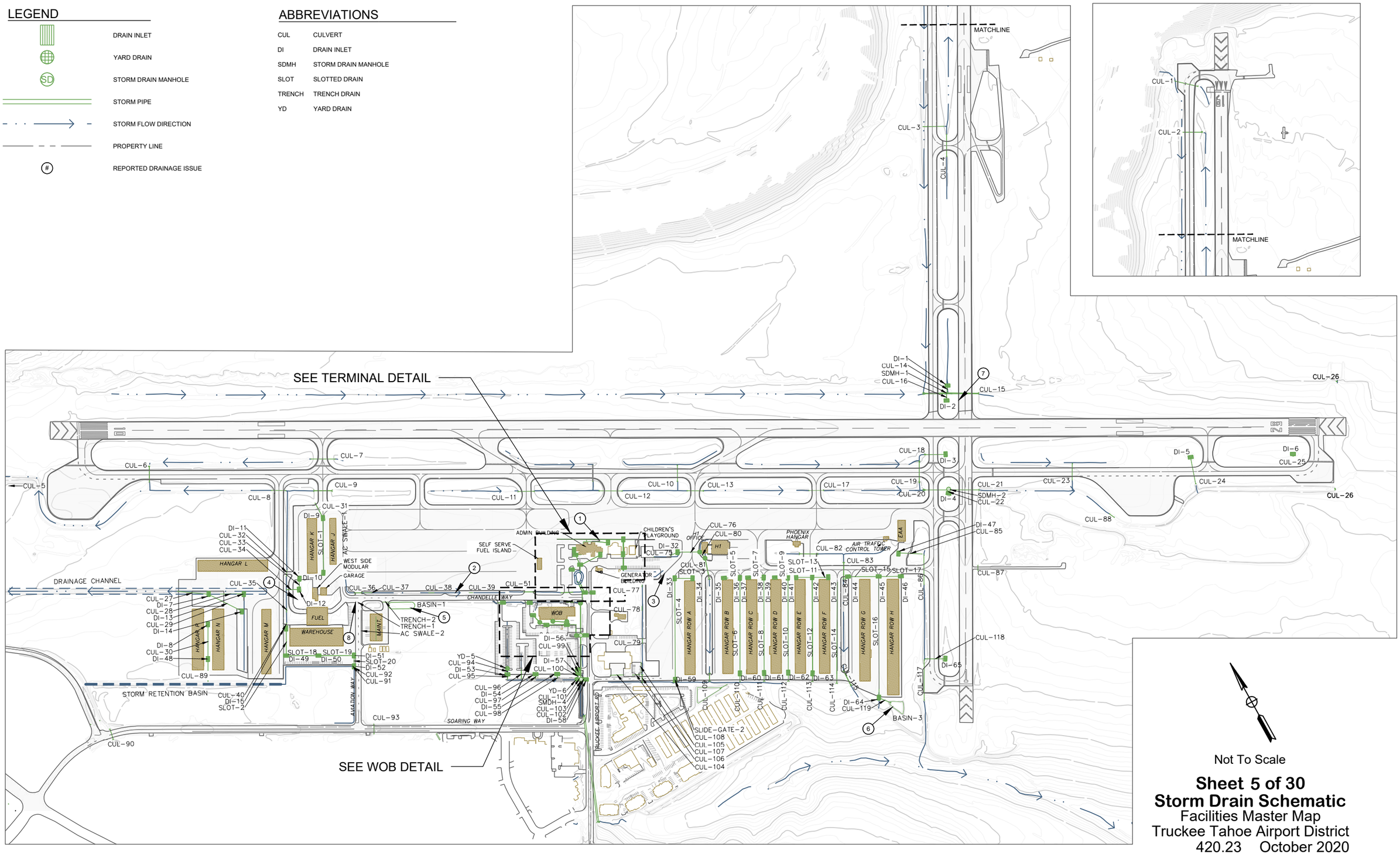
STORM DRAIN SCHEMATIC

LEGEND

- DRAIN INLET
- YARD DRAIN
- STORM DRAIN MANHOLE
- STORM PIPE
- STORM FLOW DIRECTION
- PROPERTY LINE
- REPORTED DRAINAGE ISSUE

ABBREVIATIONS

CUL	CULVERT
DI	DRAIN INLET
SDMH	STORM DRAIN MANHOLE
SLOT	SLOTTED DRAIN
TRENCH	TRENCH DRAIN
YD	YARD DRAIN



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Sheet 5 of 30
Storm Drain Schematic
Facilities Master Map
Truckee Tahoe Airport District
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HANGAR K
HANGAR
SLOT-1
DI-10
1"CONDUIT
1"SEC
ABANDONED WATER LATERAL
4-4", 2-2", 1-6"
SPARE CONDUIT
34" DEEP ABANDONED TEL (ABOVE ELEC, DIRECT BURY)
4" ABANDONED SECONDARY (ABOVE WATER)
4" AC WATER (BOTTOM OF TRENCH)
REIL
CUL-32
DI-11
CUL-33
CUL-34
DI-12
SPARE
GATE
GATE ELEC
GATE COM
CUL-36
CUL-37
WEST SIDE MODULAR
GARAGE
SCO
GM
ABANDONED VALVE
8"W
12"W
4" PE
3PH PRI
12" WATER (3' DEEP)
4" TELEPHONE AND FIBER OPTIC
2-4" PRIMARY ELEC (ABANDONED)
12X12X6 TEE
2-4"PRI
TSD CT09-B18
2" PE
TRENCH-2
JB
21" SANITARY SEWER TRENCH-1
CUL-35
6" DIP
FUEL FARM
FUEL FARM ELEC PANEL
8"SS
MAINT. BUILDING
CUL-40
BASIN-1

GRAPHIC SCALE
40 0 20 40
1 INCH = 40 FEET

Sheet 6 of 32
Fuel Farm Detail
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

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TRENCH-3
2-4" ELEC (EMPTY)
RUNWAY LIGHTS
2-4" ELEC (EMPTY)
DRY WELL
DI-30
RAMP LIGHTING
CUL-42
NOT FOUND
GATE
CUL-41
ADMIN BUILDING
SCO
SCO
3-PH XFORMER
CUL-73
CUL-74
IRR
ABANDONED ELEC
RUNWAY LIGHTS
ABANDONED TEL
SCO
6" SEWER SDR35
DI-26
ESSENTIAL POWER
IRR FROM BLDG
4" GREASE SDR35
CUL-43
ABANDONED
DI-27
6" FIRE
SCO
3-4" FUTURE
ROOF
NON-ESSENTIAL PRIMARY 2-4"
DI-29
2.5" SERVICE
SCO
IRRIG
CUL-44
AWOS
1"SITE LIGHTING
CUL-45
ABAN. ELEC
ABAN. TEL
CUL-47
IRR
IRR
IRR
DI-28
3-PH XFORMER
4"PRI 3PH
CHILLER LINE
SCO
SELF SERVE FUEL ISLAND
2-2" FUTURE
1-2" SITE
4-1" FUEL
1-4" PRIMARY
IRR
DI-25
CUL-46
2-4" ELEC
GEN
6"W
DI-31
12"W
12"W
8"W
8"W
GATE
CUL-48
ABAN. ELEC
ABAN. DIR.BUR.
3-3" SOLAR (FUTURE)
ABANDONED WELL
CHILLER SLAB
TELEPHONE AND FIBER OPTIC
BASIN-2
1"SITE LIGHTING
34" DEEP ABANDONED TEL (ABOVE ELEC, DIRECT BURY)
4" ABANDONED SEC (ABOVE WATER)
4" AC (BOTTOM OF TRENCH)
2-4"ELEC (TO HOT BOX)
12"W
6"SS
6"SS
ABANDONED TELEPHONE
CUL-50
CUL-49
CUL-52
4"PRI
DI-24
CUL-53

GRAPHIC SCALE
40 0 20 40
1 INCH = 40 FEET

Sheet 7 of 32
Admin Building Detail
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

J:\420.23\Dwg\Exhibits\TTAD Master Map\420.21_Terminal.dwg

AUERBACH ENGINEERING CORPORATION

GATE

CHANDELLE WAY

WOB

4"PRI

CUL-50

CUL-49

CUL-51

CUL-52

DI-24

CUL-53

CUL-57

CUL-58

SAND/OIL SEPARATOR

CUL-59

SCO 017

SCO 016

SCO 018

CUL-56

TSD CT09-B20

DI-17

12" WATER (3' DEEP)

DI-16

4" TELEPHONE AND FIBER OPTIC

CUL-55

2-4" ELEC (ABANDONED?)

21" SANITARY SEWER

DI-18

CUL-61

YD-1

CUL-62

YD-2

CUL-63

CUL-64

YD-3

DI-21

CUL-60

CUL-65

DI-19

CUL-66

CUL-67

CUL-68

DI-20

CUL-69

YD-4

CUL-70

SDMH-3

CUL-72

DI-22

12"W

6"SS

2-

4"PRI

GRAPHIC SCALE

40 0 20 40

1 INCH = 40 FEET

Sheet 8 of 32
WOB Detail
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Exhibits\TTAD Master Map\420.21_WOB.dwg

RAMP LIGHTING
IRRIGATION TO PLAYGROUND
1-PH XFORMER
HB
CUL-75
DI-32
4"PRI 1-PH
CUL-76
HANGAR 1 OFFICE
SCO
HANGAR 1
3"SEC
CUL-80
TDPUD VAULT
GAS
RAMP LIGHTING SHUT-OFF
4" PRI 3PH
ABAN ELEC
GATE
4" PRI 3PH
CUL-81
3PH XFORMER
4" PRI 3-PH
4"W
VALVES NOT LOCATED PAVED OVER?
4"PRI 1PH
3" PRI 1PH
SLOT-5
8"W
DI-35
SEC
DI-36
HANGAR B
SLOT-3
DI-33
DI-34
1-PH XFORMER
SLOT-4
HANGAR A
GATE AND LIGHT ELEC
CUL-77
8"W

GRAPHIC SCALE
40 0 20 40
1 INCH = 40 FEET

Sheet 9 of 32
Hangar 1 Detail
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Exhibits\TTAD Master Map\420.21_Hangar1.dwg

MATCH LINE SEE SHEET E2

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 1E

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET E1

TAXIWAY N

TAXIWAY G

RUNWAY 2-20

MATCH LINE SEE SHEET E3

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 2E

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET E2

TAXIWAY V

TAXIWAY G

RUNWAY 2-20

MATCH LINE SEE SHEET E4

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 3E

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET E3

TAXIWAY P

TAXIWAY G

RUNWAY 2-20

MATCH LINE SEE SHEET E5

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 4E

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

JOERGER DRIVE

HWY 267

MATCH LINE SEE SHEET 6A

MATCH LINE SEE SHEET 5B

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 5A

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5A

MATCH LINE SEE SHEET 5C

RUNWAY 11–29

TAXIWAY B

TAXIWAY A

MATCH LINE SEE SHEET 6B

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 5B

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5B

MATCH LINE SEE SHEET 5D

RUNWAY 11–29

TAXIWAY C

TAXIWAY D

TAXIWAY A

MATCH LINE SEE SHEET 6C

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 5C

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5C

MATCH LINE SEE SHEET 5E

RUNWAY 11–29

TAXIWAY D

TAXIWAY A

TAXIWAY F

MATCH LINE SEE SHEET 6D

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 5D

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 4E

MATCH LINE SEE SHEET 5D

MATCH LINE SEE SHEET 5F

RUNWAY 11–29

TAXIWAY G

RUNWAY 2–20

TAXIWAY A

MATCH LINE SEE SHEET 6E

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 5E

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5E

RUNWAY 11–29

TAXIWAY A

TAXIWAY U

TAXIWAY J

MATCH LINE SEE SHEET 5G

MATCH LINE SEE SHEET 6F

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 5F

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5F

RUNWAY 11–29

TAXIWAY J

TAXIWAY A

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 5G

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5A

JOERGER DRIVE

MATCH LINE SEE SHEET 6B

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 6A

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J: \420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5B

MATCH LINE SEE SHEET 6A

MATCH LINE SEE SHEET 6C

HANGAR L

HANGAR P

JT

TEL

W

E

SS

JOERGER DRIVE

MATCH LINE SEE SHEET 7B

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 6B

Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5C

MATCH LINE SEE SHEET 6B

MATCH LINE SEE SHEET 6D

MATCH LINE SEE SHEET 7C

HANGAR L

HANGAR K

HANGAR J

HANGAR N

HANGAR M

GARAGE

WEST SIDE MODULAR

FUEL FARM

WAREHOUSE

MAINT. BUILDING

WEST RAMP

SOUTH RAMP

GATE 4

GATE

CHANDELLE WAY

2" TELE

1" TEL

4" TELE

4" TELE

SEE FUEL FARM DETAILED SITE PLAN

34" DEEP ABANDONED TEL (ABOVE ELEC, DIRECT BURY)

4" TELEPHONE AND FIBER OPTIC

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 6C

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5D

WEST RAMP

EAST RAMP

SEE HANGAR 1 AND 2
DETAILED SITE PLAN

GATE 6

ADMIN BUILDING

34" DEEP TEL
(ABOVE ELEC,
DIRECT BURY,
ABANDONED)

4" TELEPHONE
AND FIBER OPTIC

GATE

CHANDELLE WAY

WOB

H1 OFFICE

HANGAR 1 (H1)

TAXIWAY R

TAXIWAY A

GATE 7

TRUCKEE AIRPORT ROAD

JET RAMP

GATE

HANGAR ROW A

HANGAR ROW B

HANGAR ROW C

MATCH LINE SEE SHEET 6C

MATCH LINE SEE SHEET 6E

MATCH LINE SEE SHEET 7D

GRAPHIC SCALE
100 0 50 100
1 INCH = 100 FEET

Grid 6D
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MosterMap.dwg

MATCH LINE SEE SHEET 5E

EAST RAMP

TAXIWAY Q

AIR TRAFFIC CONTROL TOWER

EAA

PHOENIX HANGAR

TAXIWAY R

MATCH LINE SEE SHEET 6D

MATCH LINE SEE SHEET 6F

HANGAR ROW D

HANGAR ROW E

HANGAR ROW F

HANGAR ROW G

HANGAR ROW H

TAXIWAY G

RUNWAY 2–20

AWOS CABLE ROAD

MATCH LINE SEE SHEET 7E

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 6E

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 5F

MATCH LINE SEE SHEET 6E

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 6F

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 6B

SOARING WAY

MATCH LINE SEE SHEET 7C

GRAPHIC SCALE
100 0 50 100
1 INCH = 100 FEET

Grid 7B
Facilities Master Map
Truckee Tahoe Airport District
420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 6C

4" PVC (EMPTY)

40' 4"ø FUTURE TELE

40' 4"ø FUTURE GAS

AVIATION WAY

GATE

SOARING WAY

2-4" CONDUITS (EMPTY)

55' 4"ø FUTURE GAS

55' 4"ø FUTURE TELE

MATCH LINE SEE SHEET 7B

MATCH LINE SEE SHEET 7D

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 7C

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 6D

MATCH LINE SEE SHEET 7C

MATCH LINE SEE SHEET 7E

AIRSHOW WAY

GATE 5

HANGAR ROW A

HANGAR ROW B

HANGAR ROW C

SOARING WAY

BUSINESS PARK DRIVE

TRUCKEE AIRPORT ROAD

GRAPHIC SCALE

100 0 50 100

1 INCH = 100 FEET

Grid 7D

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J:\420.23\Dwg\Pr-Civil\TTAD-MasterMap.dwg

MATCH LINE SEE SHEET 6E

HANGAR ROW D

HANGAR ROW E

HANGAR ROW F

HANGAR ROW G

HANGAR ROW H

TAXIWAY S

AWOS CABLE ROAD

MATCH LINE SEE SHEET 7D

GRAPHIC SCALE

100 0 50 100

1 INCH = **100** FEET

Grid 7E

Facilities Master Map

Truckee Tahoe Airport District

420.23 October 2020

AUERBACH ENGINEERING CORPORATION

J: \420.23\Dwg\Pr-Civil\TAD-MasterMap.dwg

Appendix B

EFS Fire Safety Analysis

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ENGINEERED FIRE SYSTEMS, INC.
FIRE PROTECTION SPECIALISTS

March 10, 2016

Phred Stoner
Director of Operations and Maintenance
Truckee Tahoe Airport
10356 Truckee Airport Road
Truckee, CA 96161
phred@fly2trk.com

Re: Fire Safety Analysis
Industrial & Storage Building
12116 Chandelle Way
Truckee, CA

Mr. Stoner:

I have performed a fire safety and fire sprinkler feasibility evaluation of your existing unsprinklered building at 12116 Chandelle Way.

Please note that I have referenced the following codes and standards and listed the relevant code sections after many of the individual items that I cover.

2013 California Building Code (CBC)
2013 California Fire Code (CFC)
2013 Standard for the Installation of Sprinkler Systems (NFPA 13)

My evaluation reflects these current codes that are presently in effect in California. Please refer to the end of this report for definitions of various technical terms used.

Existing Conditions

The existing building is approximately 30,000 square feet in area. It is of steel beam and girder construction with roof heights of 19 feet at the peak and 16 feet at the eaves. The building has been divided by full-height walls into seven separate tenant spaces (Suites A through D, E-1 through E-3). B, F and S Occupancies are present in this building. The building is equipped with a fire alarm system employing heat and/or smoke detectors at the ceilings.

Mountain Home Center Suite A (A-1 to A-3) (5,800 sq.ft.): Commodities are stored in cardboard boxes on wooden pallets on racks with open shelves to 17 feet top of storage. Minimum aisle width is 4 feet. Examples of stored items are patio furniture, hot tub covers and fireplaces. Some

of the packaging is encapsulated. Most of these items are considered Group A plastics / high-hazard commodities. Two small offices are in the space.

Clear Capital Suite B (4,000 sq.ft.): Parked automobiles are contained in this space. This space, as presently used, is considered an Ordinary Hazard Group 2 Occupancy.

Mountain Home Center Suite C (6,000 sq.ft): Commodities are stored in cardboard boxes or exposed on wooden pallets on racks with solid and open shelves to 17 feet top of storage. Most of the stored items are outdoor furniture made of teak wood, plastic or aluminum. Miscellaneous items are stored above and below a +/- 700 square-foot mezzanine. Also, an auto and a boat are stored on the floor in this space. As is the case in Suite A, many of the items are considered Group A plastics / high hazard commodities. An office is also included in the space.

WRA Suite D (8,000 sq. ft): Commodities are stored in cardboard boxes or exposed on wooden pallets on racks with solid shelves to 17 feet top of storage. Most aisle widths are 4 feet. Stored items include clothing in cardboard boxes and exposed encapsulated plastic tubs and other plastic items. The clothing is considered a Class IV commodity; the plastics are high hazard. An office is also included in the space. One aisle is blocked with piled empty cardboard boxes.

WRA Suite E-1 (1,100 sq.ft): Commodities are stored in cardboard boxes or exposed on wooden pallets on racks with solid shelves to 17 feet top of storage. Aisle widths are as narrow as 3 feet. Exposed plastic "swim rings" are stored encapsulated in the racks. Idle wooden pallets are stacked on the floor to approximately 6½ feet high. Again, contents are considered Group A plastics / high hazard.

Porter Simon Suite E-2 (1,200 sq.ft.): Paper records are stored in cardboard boxes on wooden shelves to 8 feet high. Aisles are approximately 2 feet wide. Paper records are considered Class III commodities. This area, as presently used, is considered an Ordinary Hazard Group 2 Occupancy.

Vacant Suite E-3 (3,500 sq. ft.): The proposed use of this space is a community workshop. A small kiln is already present in the space. The classification of this space is dependent upon the type of activities anticipated. Wood machining and product assembly are considered Ordinary Hazard Group 2 Occupancies. However, if combustible dust is present or combustibility of the contents are high, the space would qualify as an Extra Hazard Group 1 Occupancy. Flammable liquids spraying would dictate a Extra Hazard Group 2 Occupancy.

Water Supply

A 12" underground water line runs approximately 50 feet from the southwest end of the warehouse. The new underground lateral supply for the proposed fire sprinkler system would connect to this 12" line and run into the building at Suite A-2. The size of the lateral would be determined by the demand of the overhead fire sprinkler system (See Options 1 through 4 below).

Water flow data were not available. If recorded data cannot be obtained, a water flow test shall be performed on the nearest fire hydrant to determine the available water supply. The overhead fire sprinkler system shall be hydraulically designed to these results.

Fire Sprinkler Options

Below are four fire sprinkler options. All four options employ a dry-pipe fire sprinkler system. It is assumed that temperatures inside the building cannot reliably be maintained above 40°F at all times, year around.

Fire Sprinkler System Design Option 1

Ordinary Hazard Group 2: 0.20 gpm / sq.ft. / 1,950 sq. ft + 250 gpm hose allowance

This option, although the least costly, will severely limit the storage options in the warehouse. Storage of Class I to III commodities will be limited to 12 feet high; Class IV commodities to 10 feet high. Plastics would be limited to 5 feet (NFPA 13, Table13.2.1). Idle wood pallets are not allowed to be stored inside the building at any height under this design (NFPA 13, 12.12.1). The present storage configurations in Suites A, C, D and E-1 all exceed these limitations.

A 6" underground supply lateral is recommended to the base of the riser, 6" above the floor.

Fire Sprinkler System Design Option 2

Design Density: 0.20 gpm/ sq. ft. / 2,600 sq. ft. + 500 gpm hose allowance.

This option would increase solid pile storage of Class IV commodities to 12 feet high. Rack storage of Class IV commodities remain at 10 feet high (NFPA 13, Table 13.2.1). Plastic limited to 5 feet high. Idle wood pallets may be stored on the floor (not in racks) to a maximum 6 feet high (NFPA 13, Table 12.12.1.2(a)).

An 8" underground supply lateral is recommended to the base of the riser, 6" above the floor.

Fire Sprinkler System Design Option 3

Extra Hazard Group 2: 0.40 gpm/ sq. ft. / 2600 sq. ft. + 500 gpm hose allowance.

This option would increase rack storage Class IV commodities to 12 feet. Rack or solid-pile storage of plastics is allowed to 12 feet high (NFPA 13, Table 13.2.1). This option would also greatly increase the type of activities allowed in Suite E-3.

An 8" underground supply lateral is recommended to the base of the riser, 6" above the floor.

Fire Sprinkler System Design Option 4

Design Density: .60 gpm / sq. ft. / 2600 sq. ft. + 500 gpm hose allowance.

This option would allow the storage heights now present in the facility (NFPA 13, Figure 17.2.1.2.1(c)). However, the plastic stretch wrap or sheeting on top of the pallet loads (encapsulated) would have to be removed and all solid rack shelves must be converted to open shelving. Top of storage shall be a minimum 18" below the ceiling sprinklers.

An 8" underground supply lateral is recommended to the base of the riser, 6" above the floor.

Other Fire Sprinkler System Design Options

The use of Early Suppression Fast Response (ESFR) Sprinklers or Control Mode Special Application (CMSA) Sprinklers is not practical. Both these sprinklers require a minimum 36" clearance between the sprinkler and top of storage (NFPA 13, 8.11.6 & 8.12.6). With the ceiling heights at 16 feet to 19 feet, storage would be limited and the expense would not be justified. Also, ESFR sprinklers are not approved on dry pipe systems.

Offices and Suite C Mezzanine

Fire sprinklers shall be installed in all offices per Light Hazard Occupancy. Fire sprinklers shall be installed under the Suite C Mezzanine per Ordinary Group 2 Occupancy.

Fire Extinguishers

Portable fire extinguishers are installed throughout the tenant spaces. They shall be placed in accessible locations with the travel distance to an extinguisher being no greater than 75 feet (CBC Section 906)

Exits and Path of Egress

Spaces where the occupancy load is less than 30 in S Occupancies and less than 50 in F Occupancies require only one exit. However, the common path of egress shall be no more than 100 feet in a sprinklered building. That path of egress is reduced to 75 feet in an unsprinklered building of S occupancy and an occupancy load of greater than 30.

Conclusions and Recommendations

In my opinion, the warehouse facility as presently configured creates a significant fire hazard with potential loss of life and property. I would recommend installing a fire sprinkler system as outlined in Option 4. Current code would be met without altering the present storage use and activities in the building. However, solid shelving in storage racks would have to be replaced with open shelving. Also, encapsulation of pallet loads with plastic would be required to be removed. Plastic sheeting around the sides of the loads, but not on top, is acceptable.

Option 4 would be the most costly of the options. A fire booster pump may be needed if the existing water supply is not adequate. Note that installing one of the other options, but leaving the present storage as-is in the building would not be approved by the Truckee Fire Department.

In Suite E-3, high or extra-high temperature rated sprinklers should be installed in the area close to kiln. The exact temperature rating would be determined by the maximum ceiling temperature anticipated.

It is recommended that additional exits be incorporated to met current CBC and CFC code. Aisles should remain clear and unblocked.

Feel free to forward this analysis to your fire sprinkler contractor for bidding purposes or comments.

Definitions
The following definitions shall apply to the terms used in this report:

Occupancies per CBC and CFC:
Group B: Business
Group F: Assembly, Manufacturing
Group S1: Moderate hazard storage (clothing, furniture, paper products)
Group S2: Low hazard storage (metal, glass, food product, pottery)

Classification of Storage Commodities CFC and NFPA 13:
Class I Commodities: Noncombustible products placed directly on wooden pallets
Class III Commodities: Products fashioned from wood, paper, natural fibers containing 5% or less of Group A plastics by weight or volume
Class IV Commodities: Products and packaging that contain 5% to 15% by weight, or 5% to 25% by volume of Group A plastics; Level 2 Aerosols, synthetic clothing, beverages 20% to 80% alcohol
High-hazard Commodities: Products and packaging than contain more than 15% by weight or 25% by volume of Group A plastics; Level 3 Aerosols; beverages more than 80% alcohol; flammable solids

Fire Sprinkler System Design per NFPA 13:
Light Hazard Occupancy: Quantity and combustibility of contents are low; no stockpile of contents allowed (e.g. offices).
Ordinary Hazard Group 1 Occupancy: Combustibility is low, quantity of combustibles is moderate; stockpiles of contents do not exceed 8 feet.
Ordinary Hazard Group 2 Occupancy: Quantity and combustibility of contents are moderate to high; stockpiles of contents do not exceed 12 feet, plastics do not exceed 5 feet.
Extra Hazard Group 1 Occupancy: Quantity and combustibility of contents are very high and dust, lint or other materials are present
Extra Hazard Group 2 Occupancy: Moderate or substantial amounts of flammable or combustible liquids are present
High-piled storage: Solid-piled, palletized, rack, bin box and shelf storage over 12 feet high
Encapsulated: A method of packaging consisting of plastic sheeting enclosing the sides and top of a pallet load

gpm/ sq.ft.: water flow in gallons per minute per square foot that the fire sprinkler system is designed to deliver

psi: water pressure in pounds per square inch

Dry Pipe Fire Sprinkler System: A system employing sprinklers attached to piping containing air under pressure. Upon the opening of a sprinkler, the release of air pressure permits the water pressure to open a valve and water then flows in the piping system.

Wet Piping System: A system employing sprinklers attached to piping containing water.

If you have any questions or comments, please do not hesitate to call me at (530) 274-9400 x 206.

Sincerely,

Daniel Thacker

Daniel Thacker
Code Consulting & Plan Review
dan@efs1.com

ref. 20907-11.0

cc. rbena@sbcglobal.net

Appendix C

Structural Assessment

Photos

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FIELD PHOTOS

BUILDING 1 – HANGAR 1

Figure 1 Building 1 roof

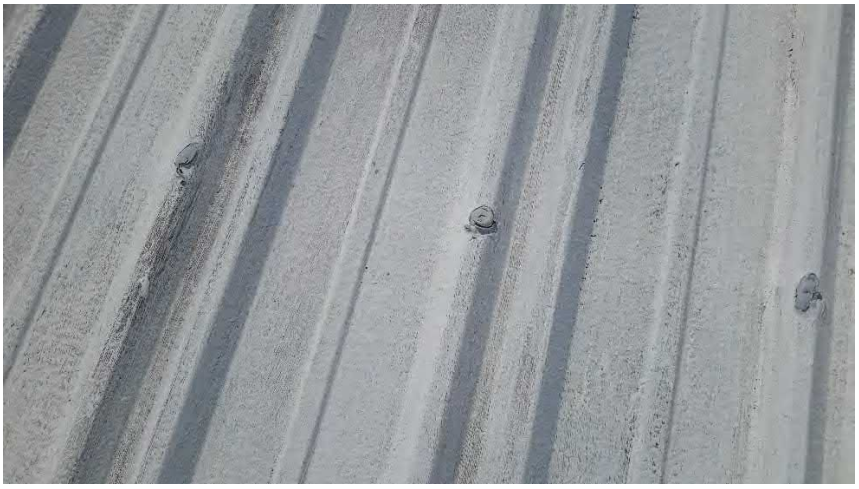

Figure 2 Building roof fasteners – recessed

Figure 3 Building 1 - peeling paint on eaves

Figure 4 Building 1 - no flashing at top of roof to wall

Figure 5 Building 1 - bird nests

Figure 6 Building 1 - no separation to grade at post base

Figure 7 Building 1 - new furred panel area, north wall

Figure 8 Building 1 - panel damage from snow

Figure 9 Building 1 - panel damage and loose fasteners

BUILDING 2 – TERMINAL BUILDING

Figure 10 Building 2 - loose screws in fascia - south side at west flat roof

BUILDING 3 – GENERATOR BUILDING

Figure 11 Building 3 - paint missing / corrosion at eave

Figure 12 Building 3 - paint missing / corrosion at eaves

BUILDING 4 – AIRPORT BEACON

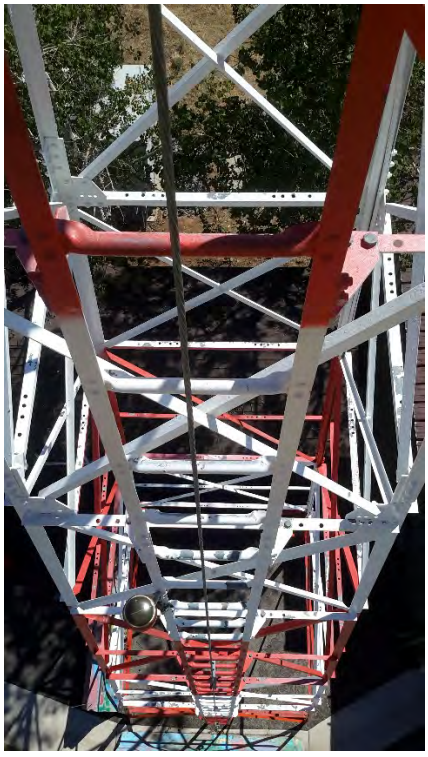

Figure 13 Building 4 - Beacon needs paint

BUILDING 5 – SELF-SERVE TANK

Figure 14 Building 5 - bolts at southwest foot are loose.

BUILDING 7 – MAINTENACE BUILDING

Figure 15 Building 7 - skylight patches

Figure 16 Building 7 - door jamb trim damaged - west side

BUILDING 8 – GARAGE

Figure 17 Building 8 - paint flaking on roof panels

Figure 18 Building 8 - damage at southwest corner

Figure 19 Building 8 - puncture hole - west side

BUILDING 9 – WEST SIDE MODULAR

Figure 20 Building 9 - paint peel and corrosion on east eave

Figure 21 Building 9 - skirt board needs protective paint

Figure 22 Building 9 - south side wall siding buckled

Figure 23 Building 9 - deck pier cracked and failing

Figure 24 Building 9 - south west deck - pier cracked and failing

BUILDING 10 – FUEL FARM

Figure 25Building 10 - foil-faced adhesive patches damaged

Figure 26 Building 10 - foil-faced adhesive patches damaged.

BUILDING 11 – WAREHOUSE

Figure 27 Building 11 - roof coating damaged and delaminating

Figure 28 Building 11 - roof coating delamination

Figure 29 Building 11 - pockets of water under roof coating

Figure 30 Building 11 - panel damage on north side

Figure 31 Building 11 - panel damage, north side

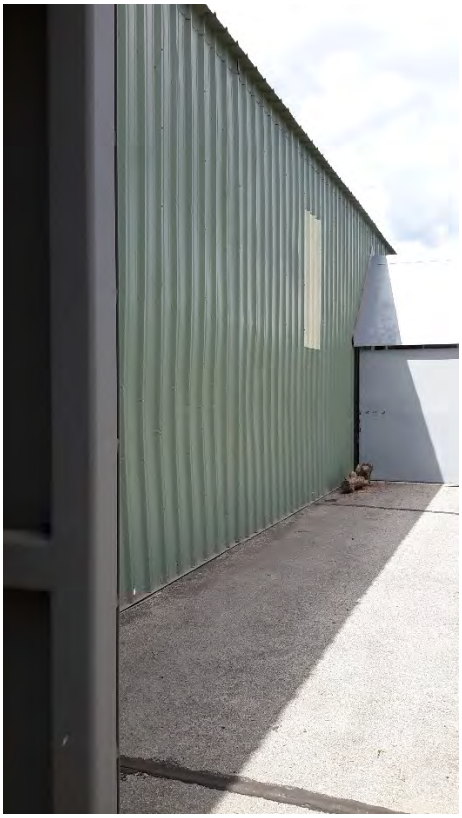

Figure 32 Building 11 - panel damage, north side

Figure 33 Building 11 - gutter damage on south side

Figure 34 Building 11 - wall panel damage on south side from snow, ice and/or vehicles

Figure 35 Building 11 - wall panel damage on south side from snow, ice and/or vehicles

Figure 36 Building 11 - wall panel damage on east side from snow, ice and/or vehicles

Figure 37 Building 11 - panel damage / corrosion on east side

BUILDING 12 – PHOENIX HANGAR

Figure 38 Building 12 - roof patchwork

Figure 39 Building 12 - roof is in poor condition

Figure 40 Building 12 - roof damage from snow and ice

Figure 41 Building 12 - wall panel fasteners missing at base, east side

Figure 42 Building 12 - wall panel damage from snow and ice

Figure 43 Building 12 - wall panel damage from snow and ice, south side

Figure 44 Building 12 - wall panel damage from snow and ice

BUILDING 13 – EAA

Figure 45 Building 13 - numerous holes in roof

Figure 46 Building 13 - holes in roof, foam below coating damaged

Figure 47 Building 13 - flaking paint, door weather-stripping, door trim damaged

Figure 48 Building 13 - trim, door jamb, paint damaged

Figure 49 Building 13 - siding corner trim damaged, south east corner

Figure 50 Building 13 - north side of building, siding is buckled, wood siding extends down to grade level

BUILDING A - HANGAR ROW A

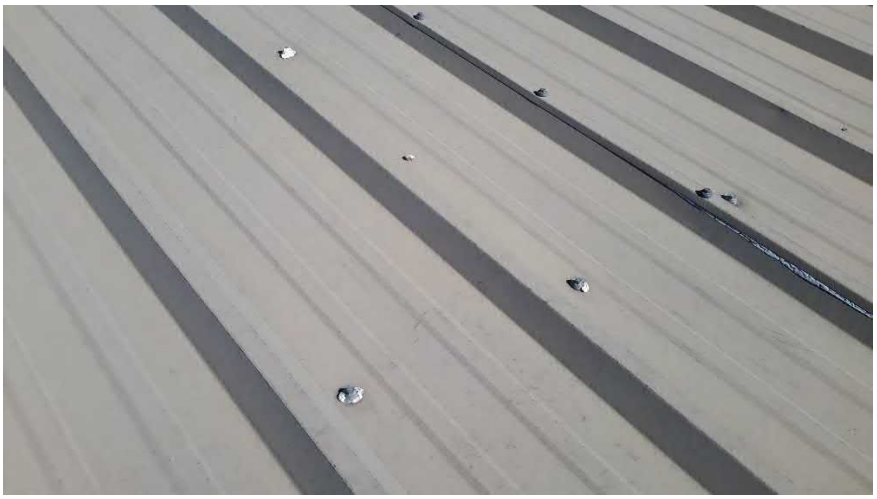

Figure 51 Hangar A - roof has older screws and deteriorating washers

Figure 52 Hanagr A - loose screws need to be tightened and/or replaced

Figure 53 Hangar A - corrosion at lap seam in middle of roof

Figure 54 Hangar A - paint coat worn off at over-frame area

Figure 55 Hangar A - damage to roofing / trim at over-frame area, south east corner

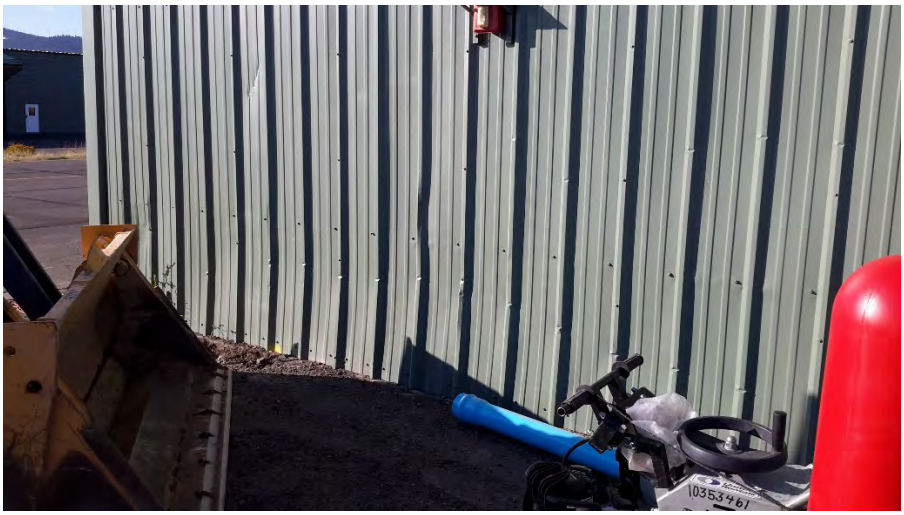

Figure 56 Hangar A - north end wall panels damaged from snow and ice

Figure 57 Hangar A - wall panel damage on north end

Figure 58 Hangar A - wall panel damage along west side

Figure 59 Hangar A - wall panel damage along west side

Figure 60 Hangar A - translucent panel damage - east side

BUILDING B – HANGAR B

Figure 61 Hangar B - roof was coated over older screws some missing washers

Figure 62 Hangar B - roof panels crimped / kinked from snow and ice damage

Figure 63 Hangar B - roof panels crimped / kinked from snow and ice damage

Figure 64 Hangar B - wall panel damage on north end from snow and ice

Figure 65 Hangar B - wall panel damage on west side (B22)

Figure 66 Hangar B - siding damage - south east corner

Figure 67 Hangar B - Panel damage - east side

Figure 68 Hangar B - panel damage - east side

Figure 69 Hangar B - translucent panel damage - east side

BUILDING C – HANGAR C

Figure 70 Hangar C - roof was coated over older screws, some missing washers

Figure 71 Hangar C - roof panels damaged from snow and ice

Figure 72 Hangar C - eave coating delaminating from roof panels

Figure 73 Hangar C - roof coating delaminating from roof panels

Figure 74 Hangar C - wall panel damage on north end

Figure 75 Hangar C - wall panel damage - west side (C24)

Figure 76 Hangar C - wall panel damage - south east corner

Figure 77 Hangar C - wall panel damage - east side (C13)

BUILDING D – HANGAR D

Figure 78 Hangar D - roof coated over older screws, some without wahers, fabric patches failing

Figure 79 Hangar D - fabric patches failing, roof panels kinked / crimped

Figure 80 Hangar D - screws working loose

Figure 81 Hangar D - wall panel damage at south west corner

Figure 82 Hangar D - door panel damage (D9)

BUILDING E – HANGAR E

Figure 83 Hangar E - paint coat on roof non-existent

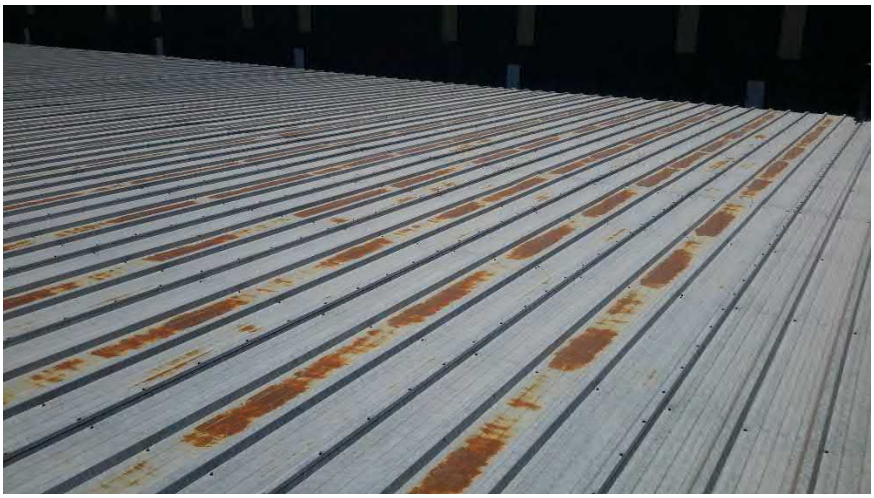

Figure 84 Hangar E - large areas of rust on roof panels

Figure 85 Hangar E - roof panel damage, crimped and kinked from snow and ice damage

Figure 86 Hangar E - roof panel damage, crimped and kinked from snow and ice damage

Figure 87 Hangar E - wall panel damage on north end from snow and ice

Figure 88 Hangar E - base of door (E16) has damage and rust evident

Figure 89 Hangar E - sealant at base of south wall ineffective and will trap moisture against panel base.

Figure 90 Hangar E - window trim on south wall missing

Figure 91 Hangar E - south wall window trim missing, wall panel damage

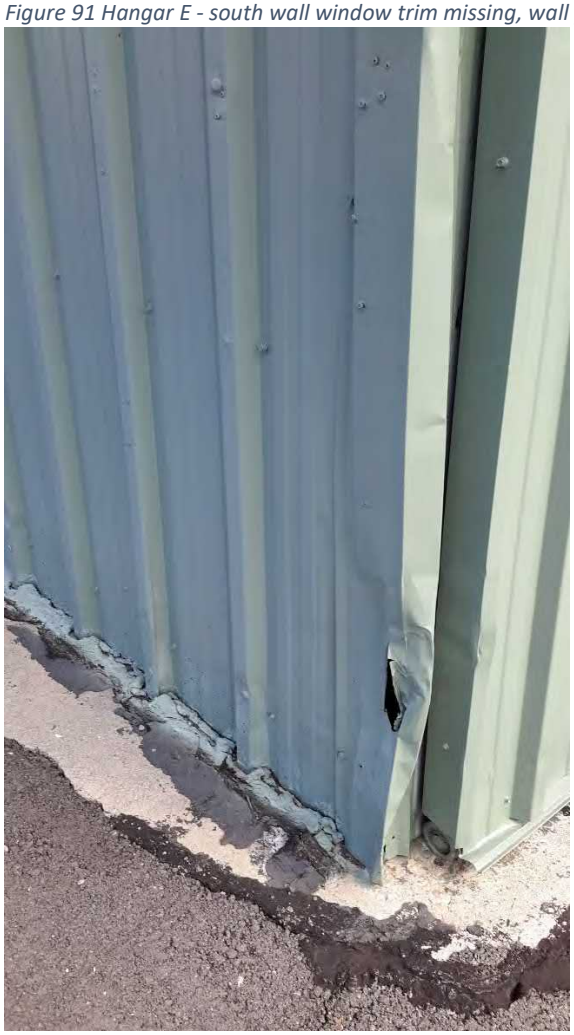

Figure 92 Hangar E - wall panel damage at south east corner

BUILDING F – HANGAR F

Figure 93 Hangar F - roof panel paint coat badly worn

Figure 94 Hangar F - loose screws evident on roof

Figure 95 Hangar F - loose screws evident on roof

Figure 96 Hangar F - roof panels show crimping and kinking damage from snow and ice

Figure 97 Hangar F - wall panel damage on north end from snow and ice

Figure 98 Hangar F - wall panel damage on north end from snow and ice

Figure 99 Hangar A - door panel damage (F2)

Figure 100 Hangar F - door panel damage (F16)

Figure 101 Hangar F - door panel damage (F18)

BUILDING G – HANGAR G

Figure 102 Hangar G - roof panel paint coat is getting worn, screws working loose

Figure 103 Hangar G - wall panel damage on north end from snow and ice

Figure 104 Hangar G - door panel damage (G4)

Figure 105 Hangar G - door panel damage (G21)

BUILDING H – HANGAR H

Figure 106 Hangar H - screws missing and loose at midline lap joint

Figure 107 Hangar H - leak patch cracking, low end, east side

Figure 108 Hangar H - low end (east side) screws loose and leak patch failing

Figure 109 Hangar H - leak patch on low end (east side) failing, screws loose

Figure 110 Hangar H - wall panel damage on north end

Figure 111 Hangar H - wall panel damage on north end

Figure 112 Hangar H - panel fasteners are missing at base of north wall

Figure 113 Hangar H - wall panel puncture (H5)

Figure 114 Hangar H - east side panel fasteners show signs of rust and are loose

Figure 115 Hangar H - sealant to translucent panels, east side, poor installation

BUILDING J – HANGAR J

Figure 116 - Hangar J - unconventional fastening system - but no reported leaks

Figure 117 Hangar J - roof panel paint coat badly worn

Figure 118 Hangar J - wall panel damage north end

Figure 119 Hangar J - wall panel damage on south west corner

Figure 120 Hangar J - column anchor bolt mis-placed

BUILDING K – HANGAR K

Figure 121 Hangar K - paint coat is badly worn

Figure 122 Hangar K - areas of rust and corrosion on roof

Figure 123 Hangar K - neoprene washers disintegrating and rust at screws

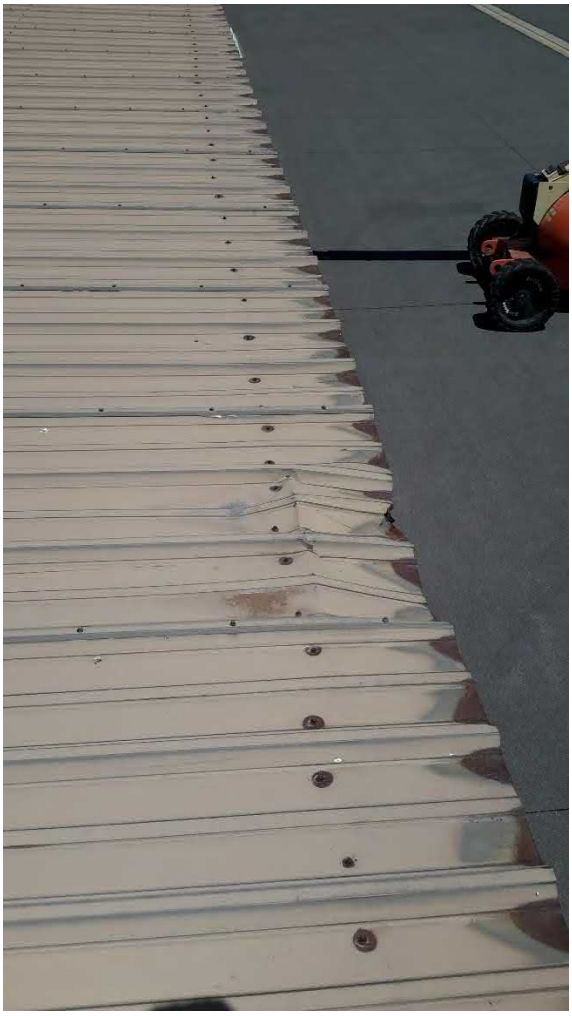

Figure 124 Hangar K - damage to low side (east side) eave from snow and ice

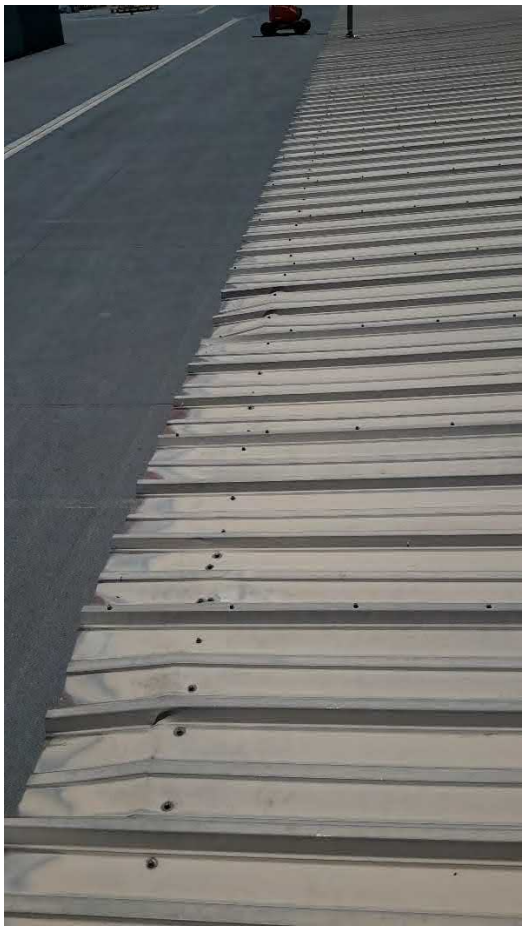

Figure 125 Hangar K - damage to low (east) side roof panels from snow and ice.

Figure 126 Hangar K - east side eave damage from snow and ice

Figure 127 Hangar K - wall panel damage on north end

Figure 128 Hangar K - wall panel damage on south east corner

Figure 129 Hangar K - door panel damage (K3)

BUILDING L – HANGAR L

Figure 130 Hangar L - wall panel damage on north side

Figure 131 Hangar L - wall panel damage on north side

Figure 132 Hangar L - wall panel damage on north side

Figure 133 Hangar L - door panel loose and missing fasteners

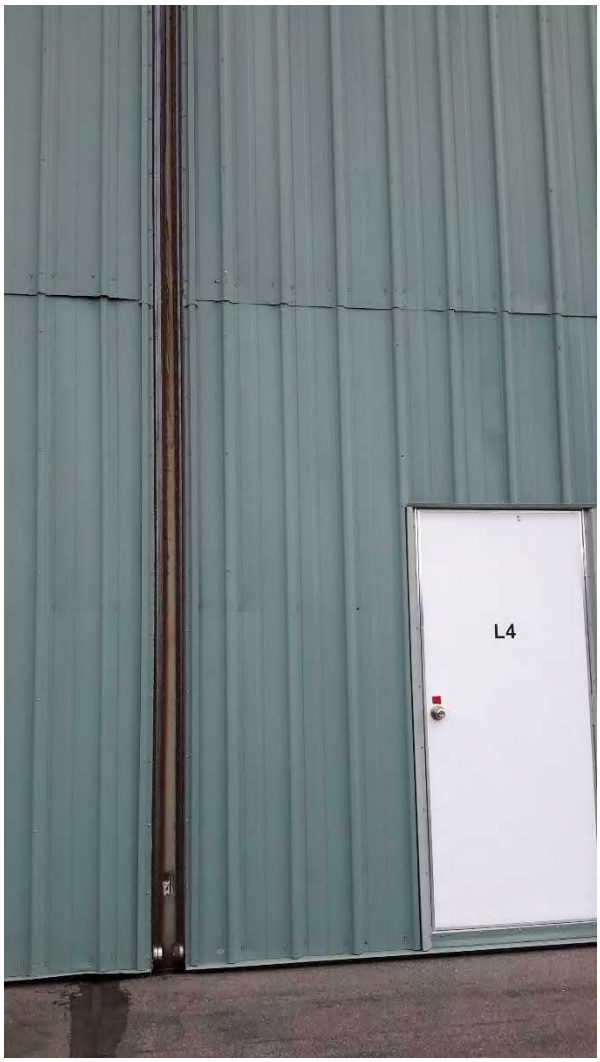

Figure 134 Hangar L - rust at door track / columns

Figure 135 Hangar L - rust at door track / column

BUILDING M – HANGAR M

Figure 136 Hangar M - numerous attempts to patch leaks

Figure 137 Hangar M - retrofit pieces installed at standing seams to try and fix leaks

Figure 138 Hangar M - gaskets and sealant loose at ridge line

Figure 139 Hangar M - foil and heavy sealant use to try and fix leaks

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Appendix D

Electrical Assessment

Photos

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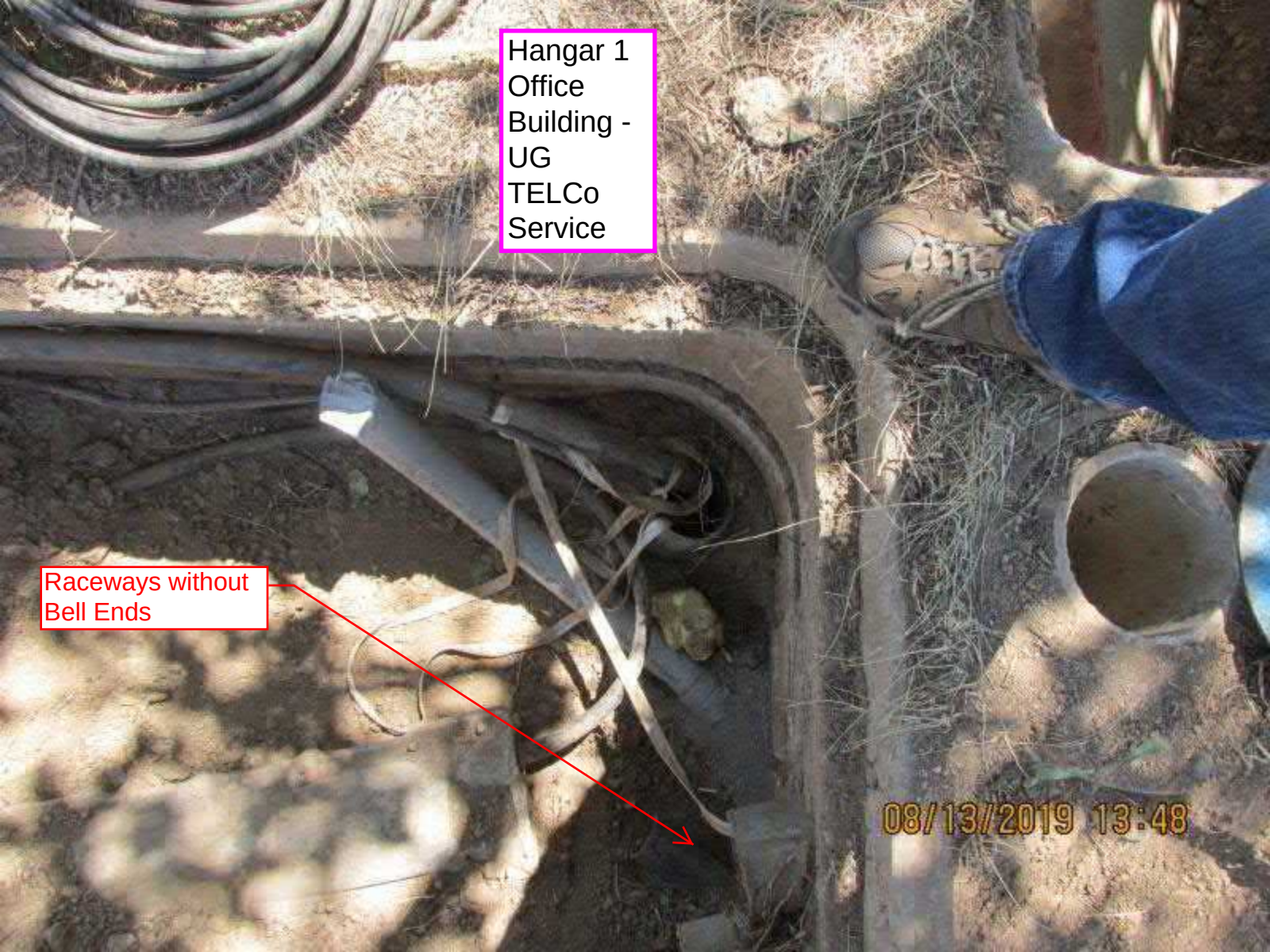
TRUCKEE
TAHOE
AIRPORT
2019 Inspection Annotated Pictures
Ramp lighting poles: Boxes not supported, devices protected at greater than their rated ampacity
08/13/2019 13:43


Ramp Lighting boxes not supported
08/13/2019 13:43

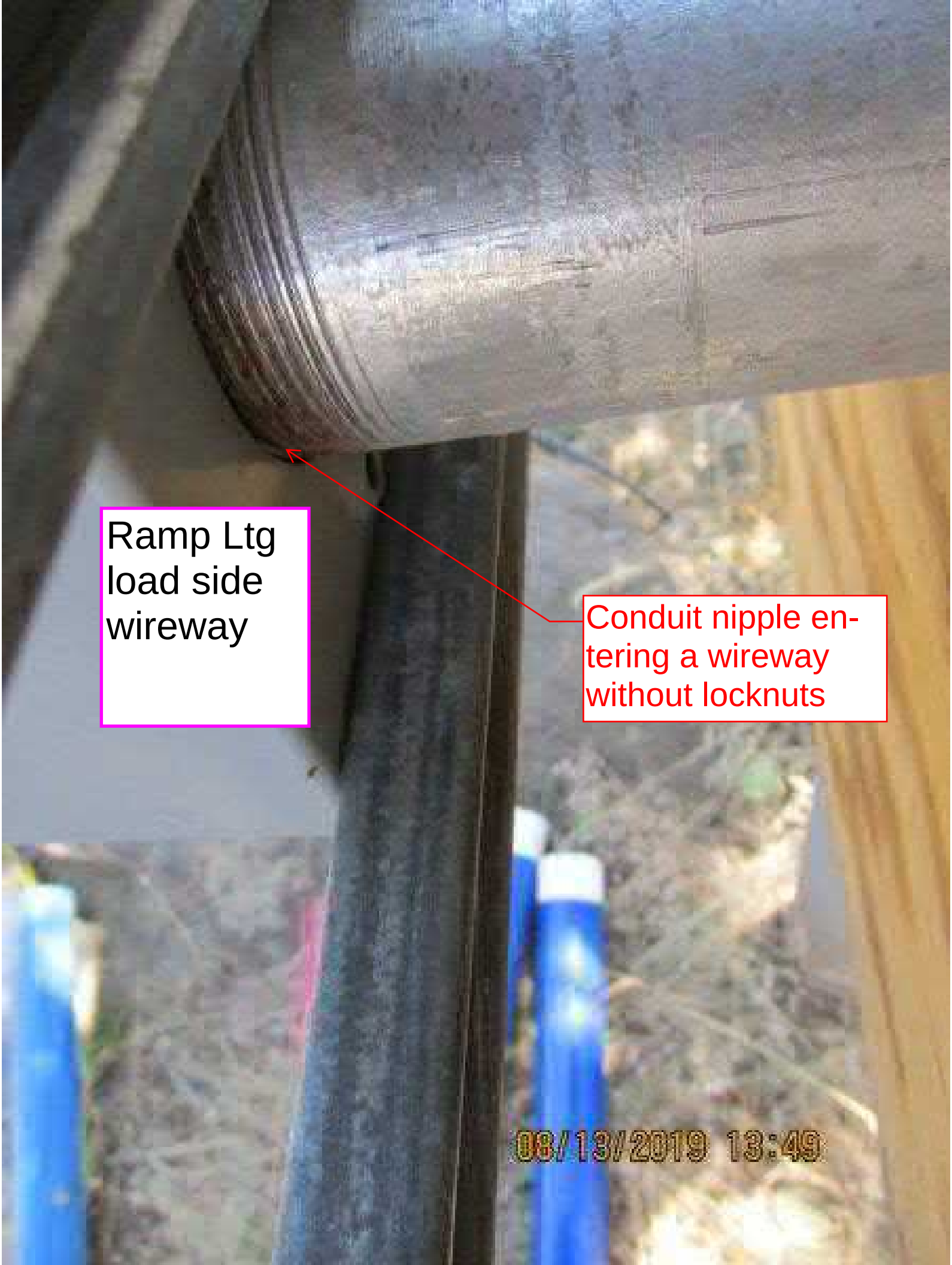

Ramp lighting dis-
connect. Is there a
bonding screw con-
necting gnd wire to
enclosure? Install if
not.
08/13/2019 13:43


Hangar 1
Office
Building
08/13/2019 13:45

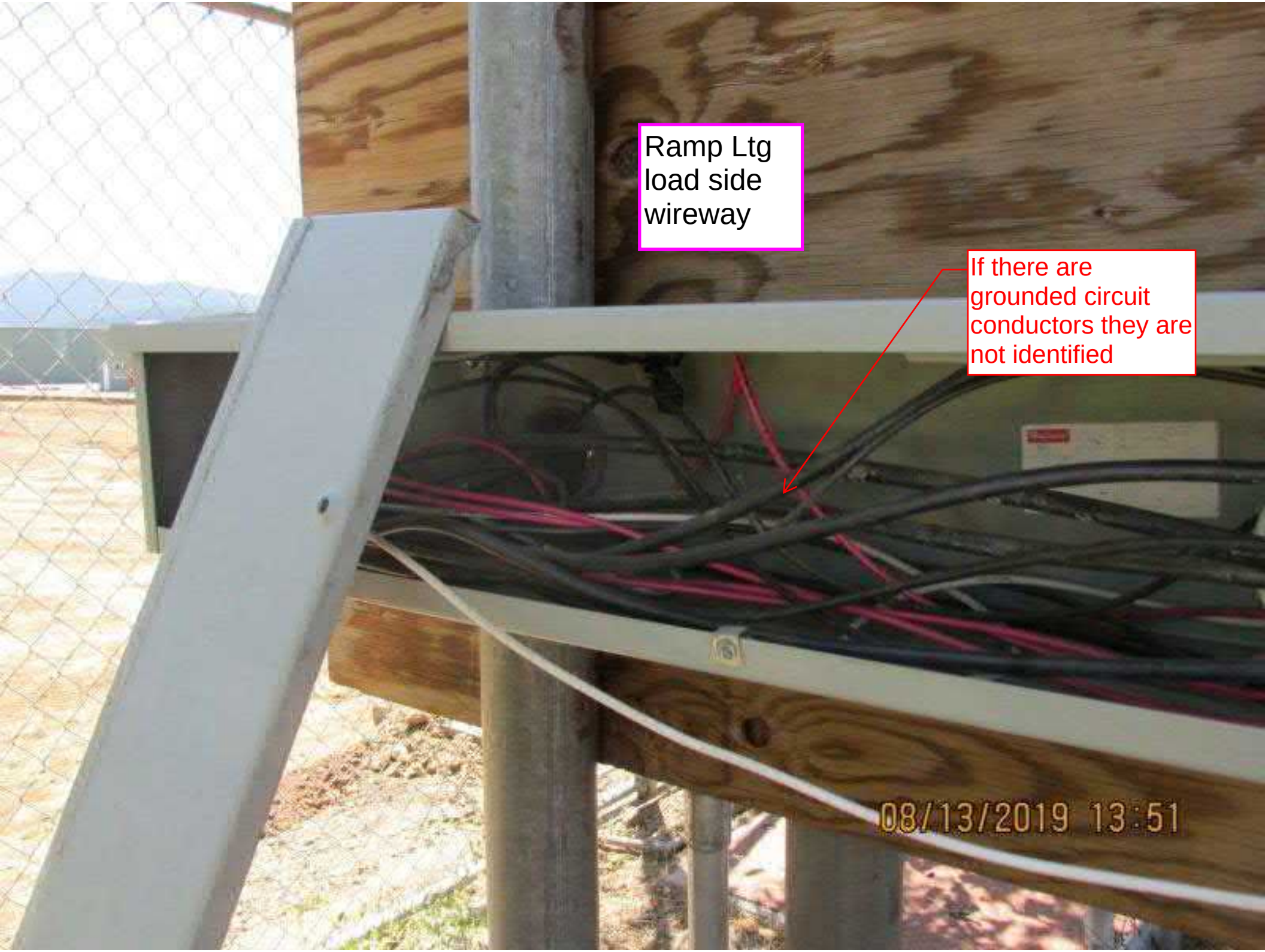

Hangar 1
Office
Building
08/13/2019 13:46


Hangar 1 Office Building - UG TELCo Service
Raceways without Bell Ends
08/13/2019 13:48


Hangar 1 Office Building - TELCo service
Raceways without Bell Ends

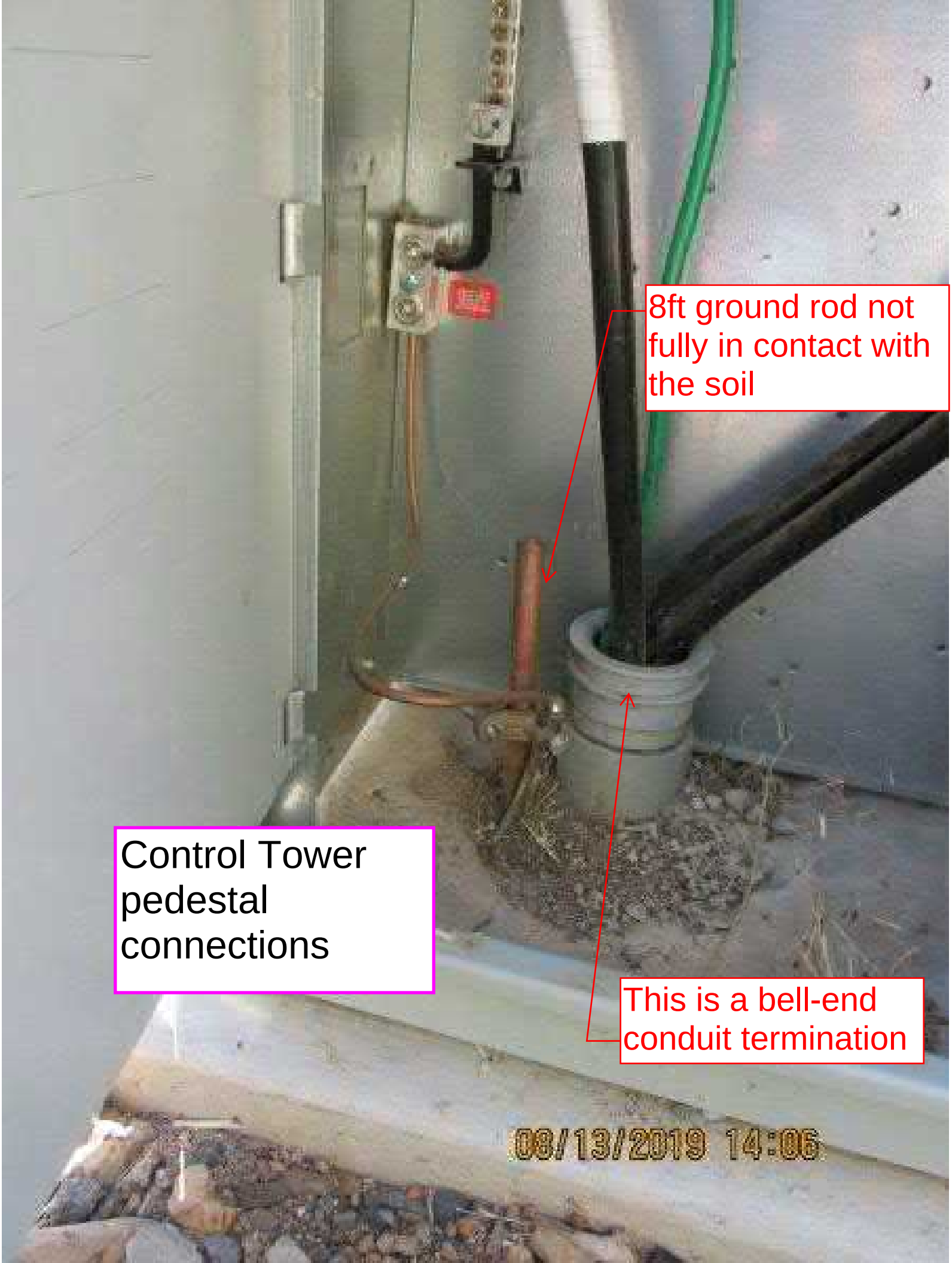

Ramp Ltg load side wireway
Conduit nipple entering a wireway without locknuts
08/13/2019 13:49


Conduit nipples without double locknuts and without insulating bushings, the wireway is not grounded.
Ramp Ltg load side wireway
08/13/2019 13:51

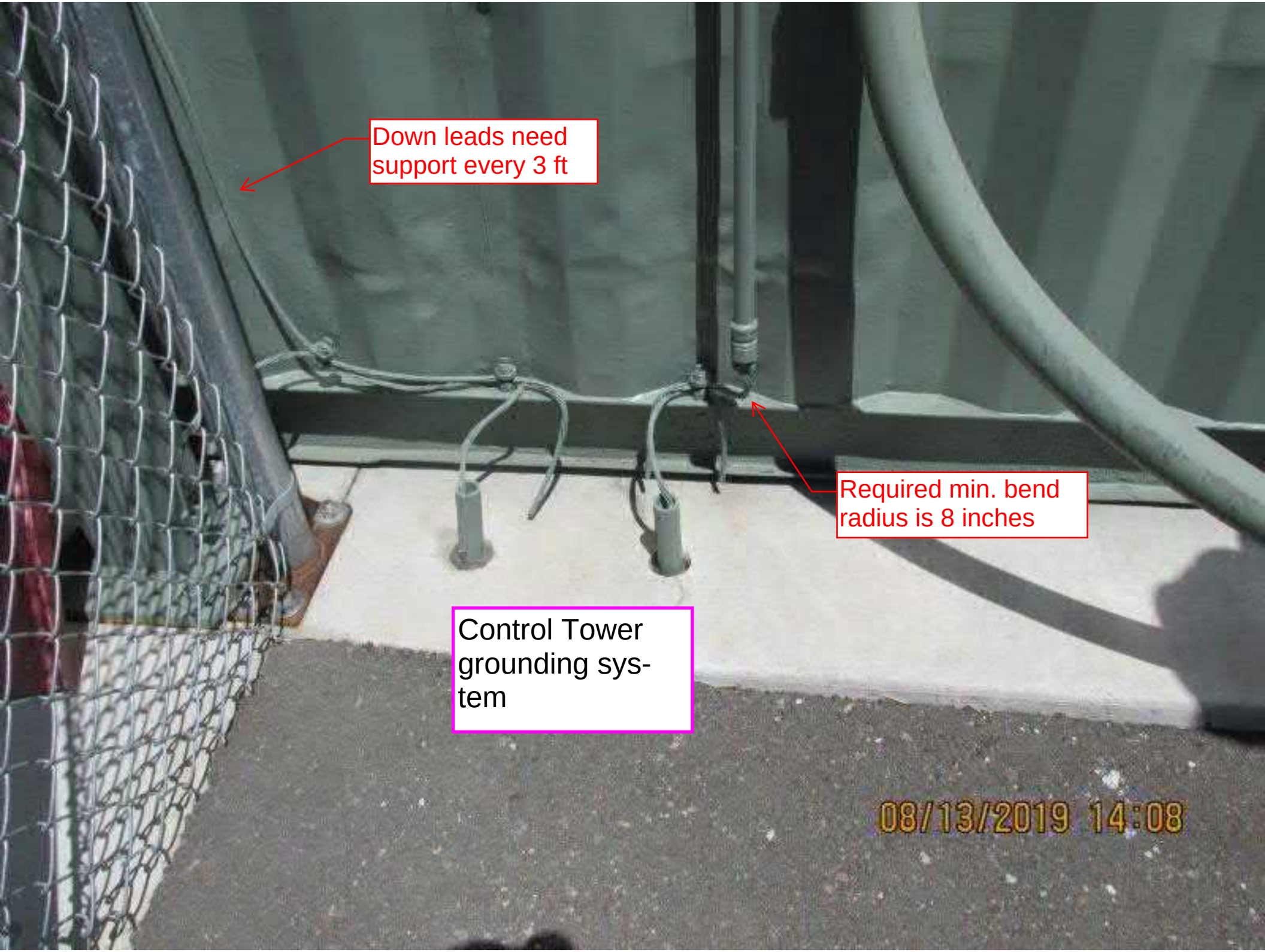

Ramp Ltg load side wireway
If there are grounded circuit conductors they are not identified
08/13/2019 13:51


Control Tower - TDPUD xfmr and pedestal
08/13/2019 14:04

Control Tower pedestal connections

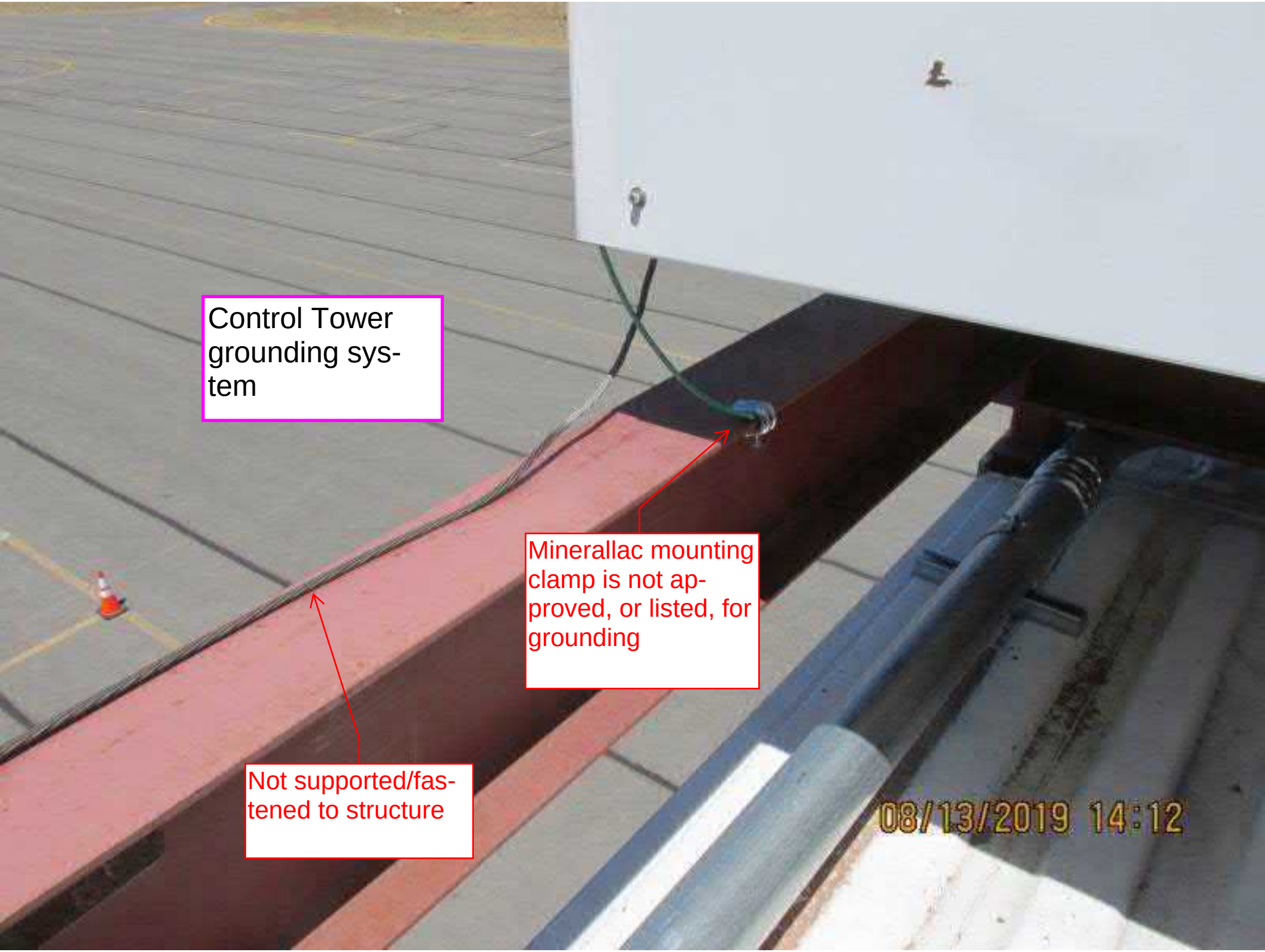

8ft ground rod not fully in contact with the soil
Control Tower pedestal connections
This is a bell-end conduit termination
08/13/2019 14:06


Control Tower
service pedestal
ground rod
08/13/2019 14:08

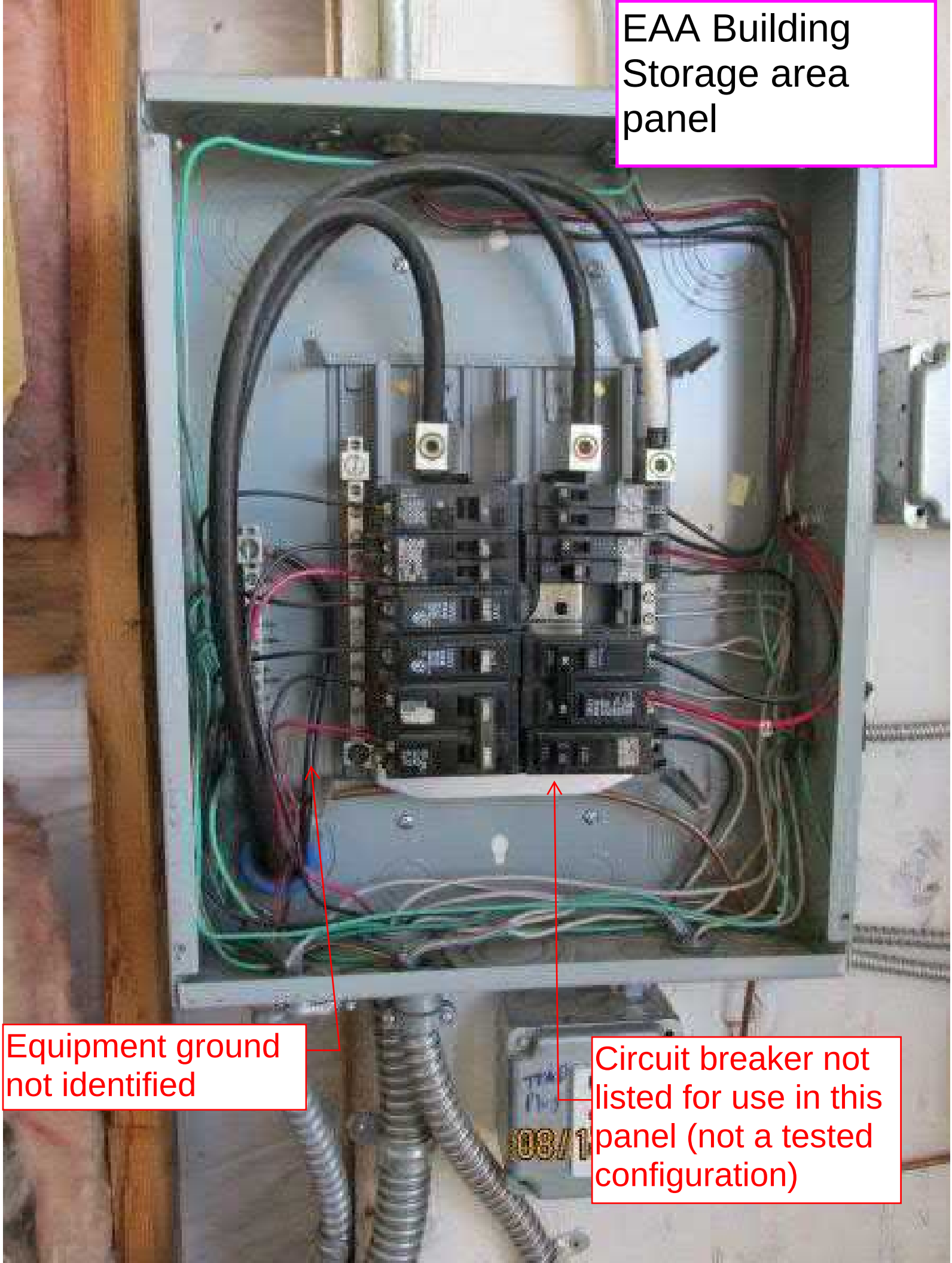

Down leads need support every 3 ft
Required min. bend radius is 8 inches
Control Tower grounding sys-tem
08/13/2019 14:08


Control Tower grounding sys-tem
Minimum radius of down lead is re-quired to be 8"
08/13/2019 14:10:

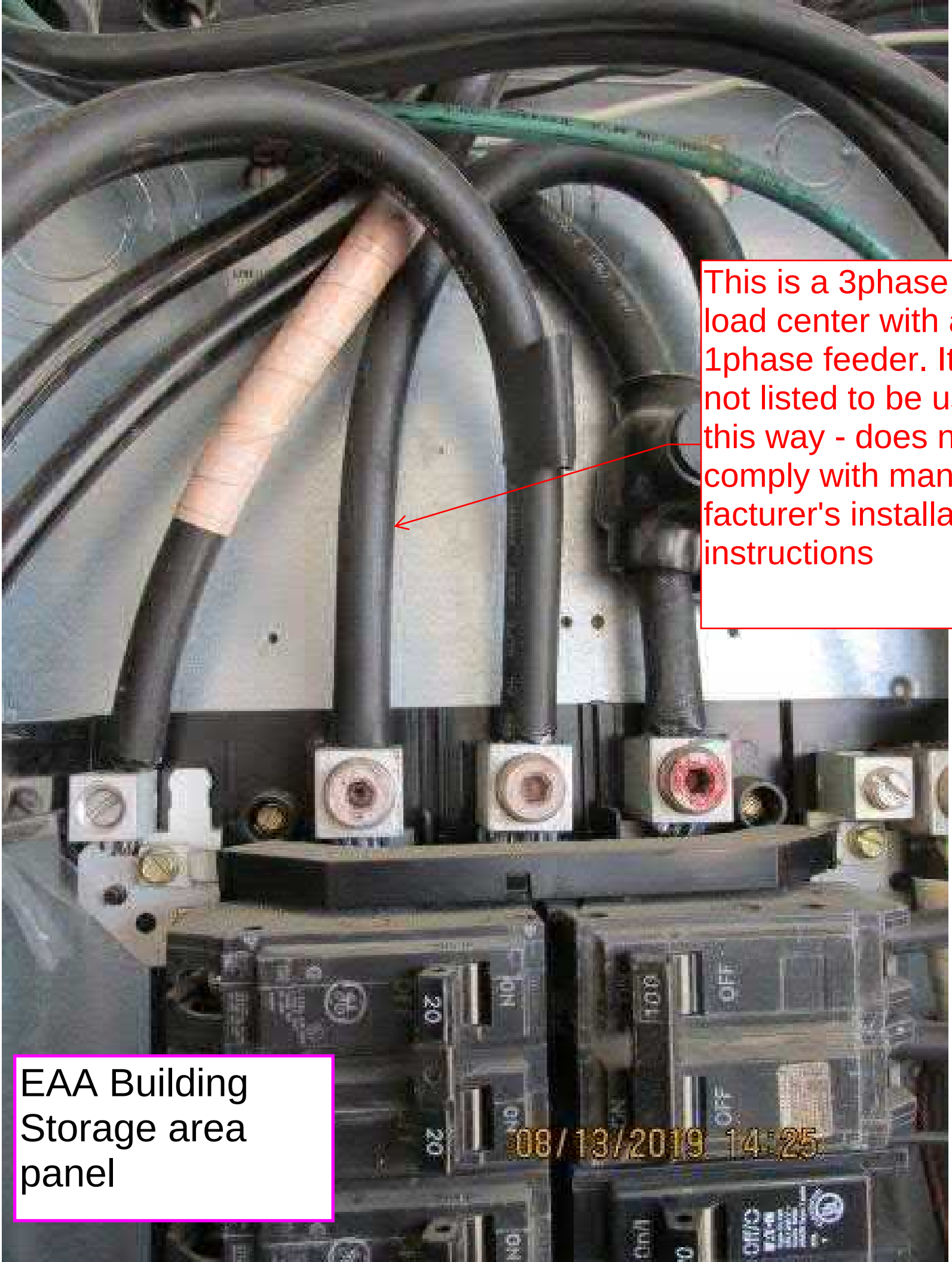

Down leads need support every 3 ft, and physical protec-tion to 8 ft
Control Tower grounding sys-tem
08/13/2019 14:10


Control Tower grounding system
Minerallac mounting clamp is not approved, or listed, for grounding
Not supported/fastened to structure
08/13/2019 14:12


EAA Building single electrode does not have 8 ft of contact with the soil. Remedy w second ground rod 20' away.
13/2019 14:15

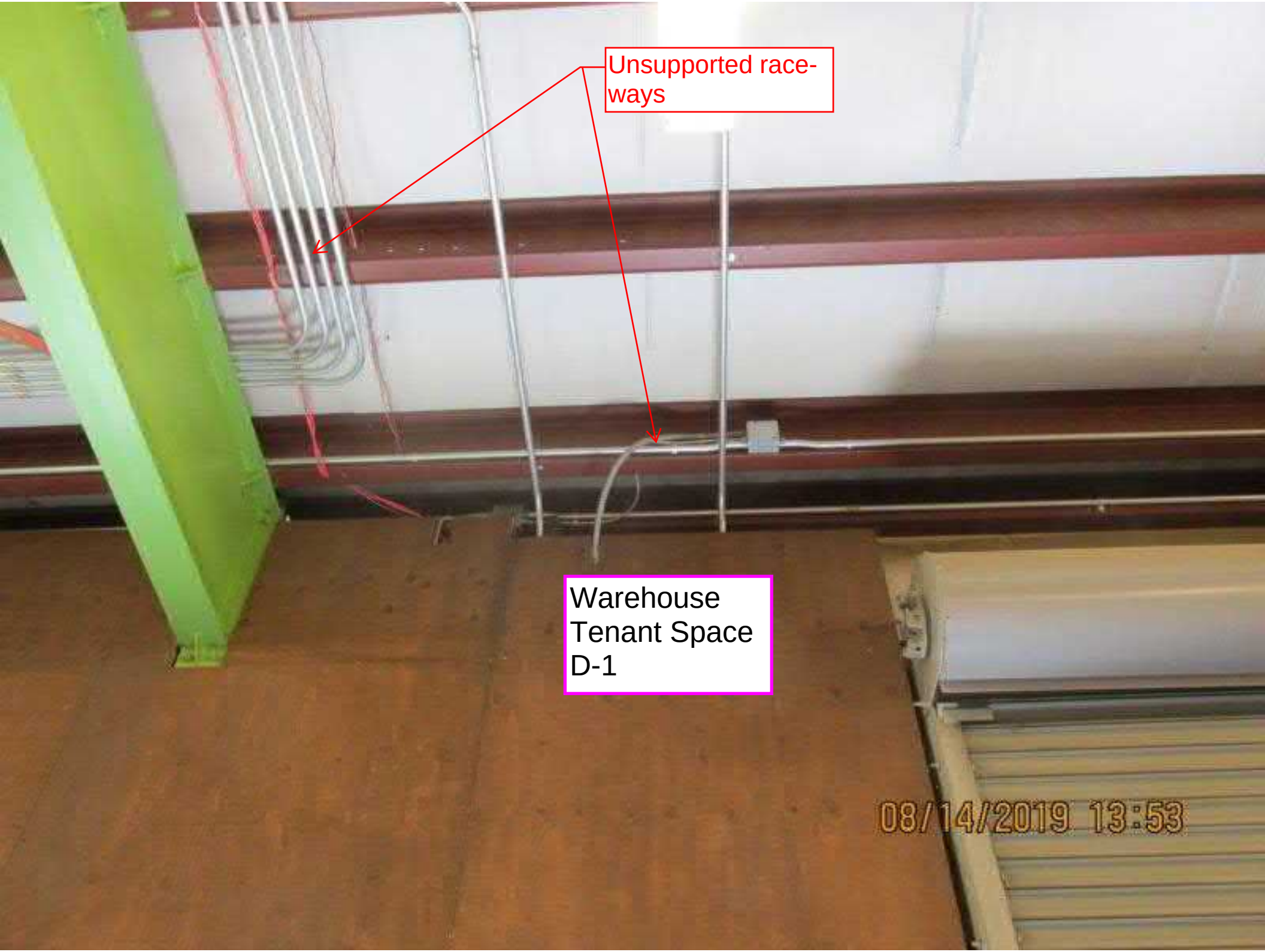

EAA Building Storage area panel
Equipment ground not identified
Circuit breaker not listed for use in this panel (not a tested configuration)


EAA Building
Storage area
panel
UF Cable in conduit
is OK
08/13/2019 14:21

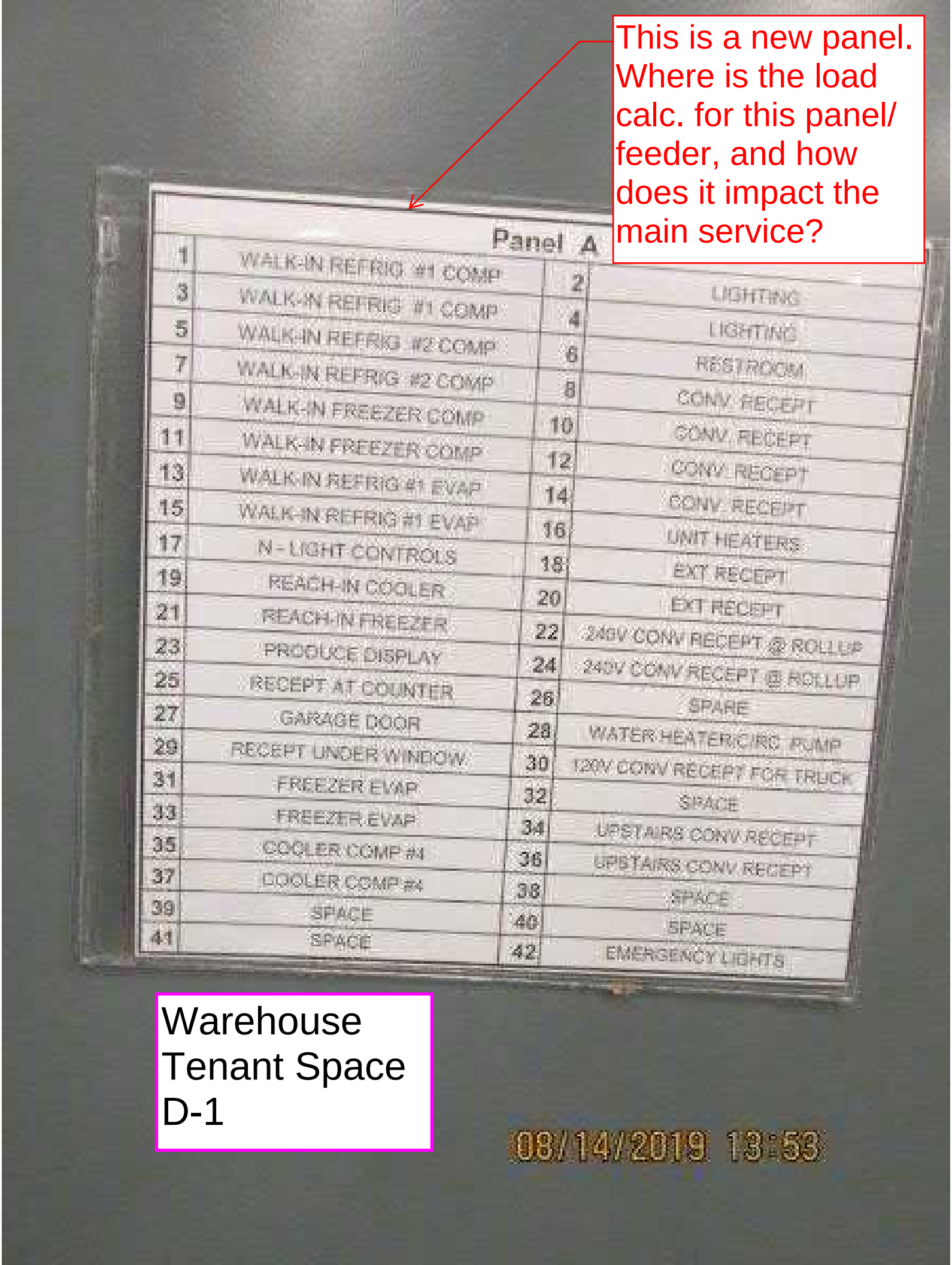

This is a 3phase load center with a 1phase feeder. It not listed to be us this way - does nc comply with manu facturer's installat instructions
EAA Building Storage area panel
08/13/2019 14:25:
ON
OFF
ON
OFF


PARKING
ONLY
MINIMUM
FINE $250
VAN
ACCESSIBLE
FARM SHOP
D-1
Warehouse
Tenant Space
08/14/2019 13:52

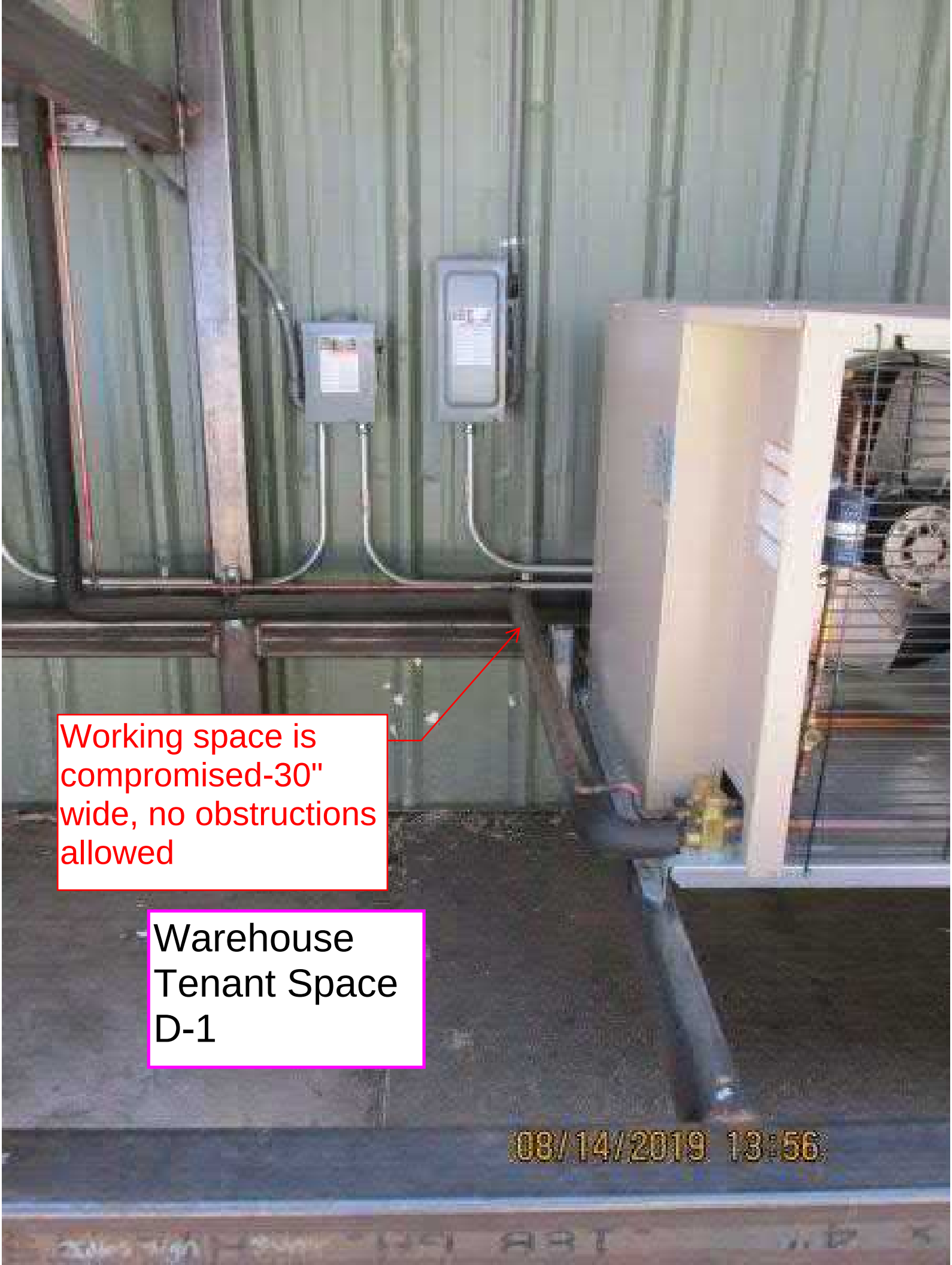

Unsupported race-ways
Warehouse Tenant Space D-1
08/14/2019 13:53

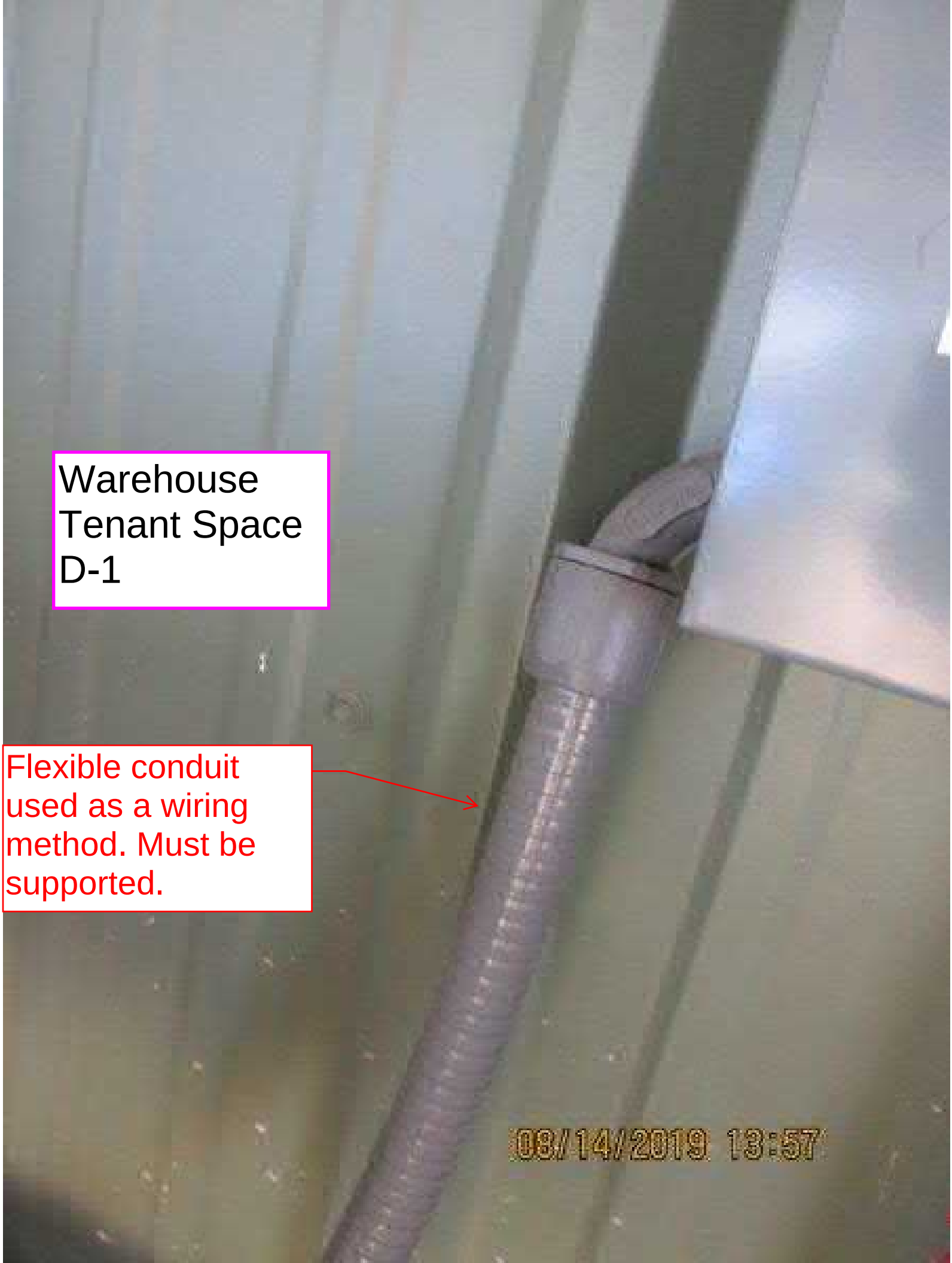

Unsupported race-ways
Warehouse Tenant Space D-1
08/14/2019 13:53


Warehouse
Tenant Space
D-1
08/14/2019 13:53


This is a new panel. Where is the load calc. for this panel/ feeder, and how does it impact the main service?
Panel A
1 WALK-IN REFRIG #1 COMP
2 LIGHTING
3 WALK-IN REFRIG #1 COMP
4 LIGHTING
5 WALK-IN REFRIG #2 COMP
6 RESTROOM
7 WALK-IN REFRIG #2 COMP
8 CONV. RECEPT
9 WALK-IN FREEZER COMP
10 CONV. RECEPT
11 WALK-IN FREEZER COMP
12 CONV. RECEPT
13 WALK-IN REFRIG #1 EVAP
14 CONV. RECEPT
15 WALK-IN REFRIG #1 EVAP
16 UNIT HEATERS
17 N - LIGHT CONTROLS
18 EXT RECEPT
19 REACH-IN COOLER
20 EXT RECEPT
21 REACH-IN FREEZER
22 240V CONV RECEPT @ ROLLUP
23 PRODUCE DISPLAY
24 240V CONV RECEPT @ ROLLUP
25 RECEPT AT COUNTER
26 SPARE
27 GARAGE DOOR
28 WATER HEATER/CIRC. PUMP
29 RECEPT UNDER WINDOW
30 120V CONV RECEPT FOR TRUCK
31 FREEZER EVAP
32 SPACE
33 FREEZER EVAP
34 UPSTAIRS CONV RECEPT
35 COOLER COMP #4
36 UPSTAIRS CONV RECEPT
37 COOLER COMP #4
38 SPACE
39 SPACE
40 SPACE
41 SPACE
42 EMERGENCY LIGHTS
Warehouse
Tenant Space
D-1
08/14/2019 13:53


Warehouse
Tenant Space
D-1
Working space is not compliant-30" min. width with NO obstructions req.
08/14/2019 13:55


Working space is compromised-30" wide, no obstructions allowed
Warehouse Tenant Space D-1
08/14/2019 13:56:

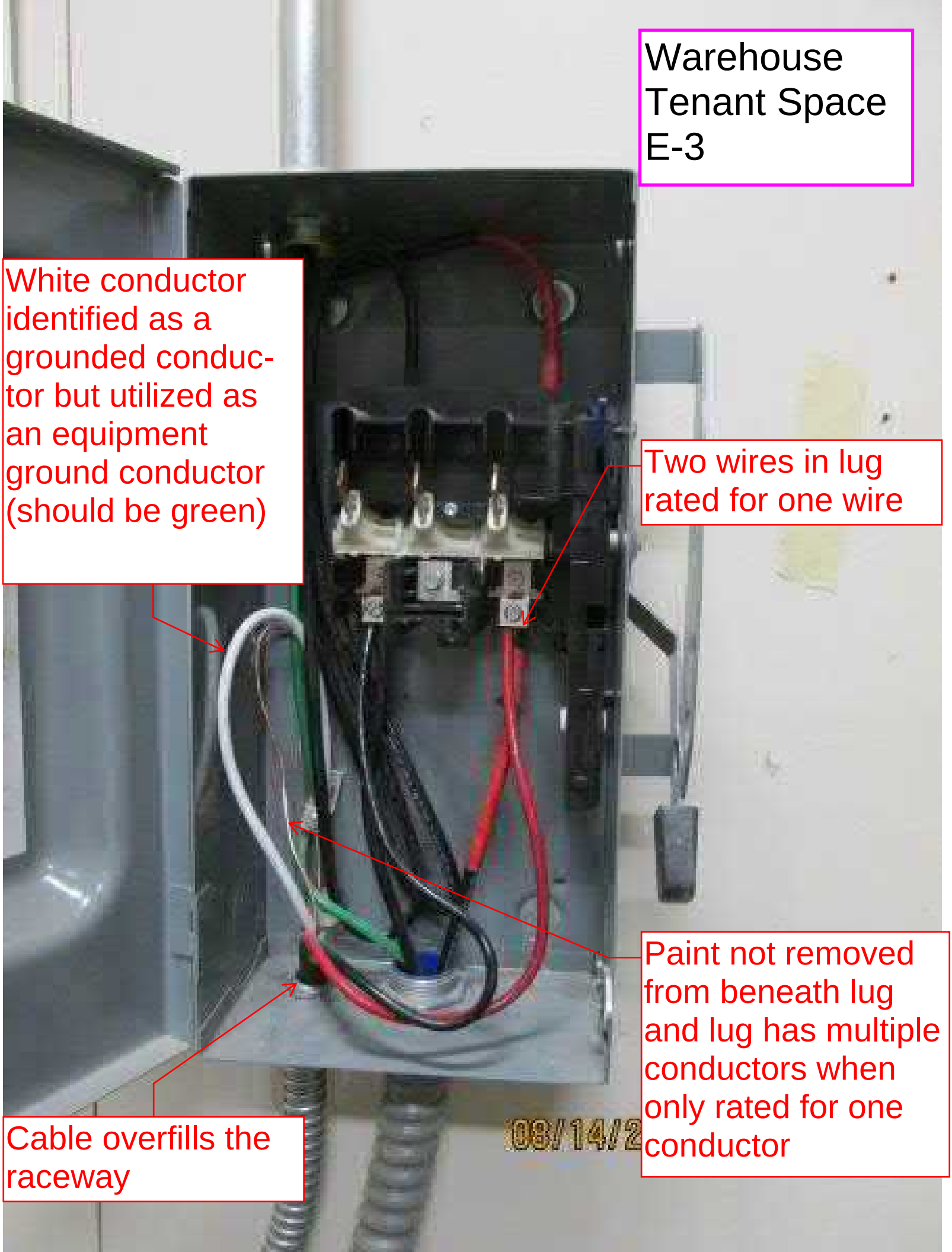

Warehouse
Tenant Space
D-1
Flexible conduit used as a wiring method. Must be supported.
08/14/2019 13:57

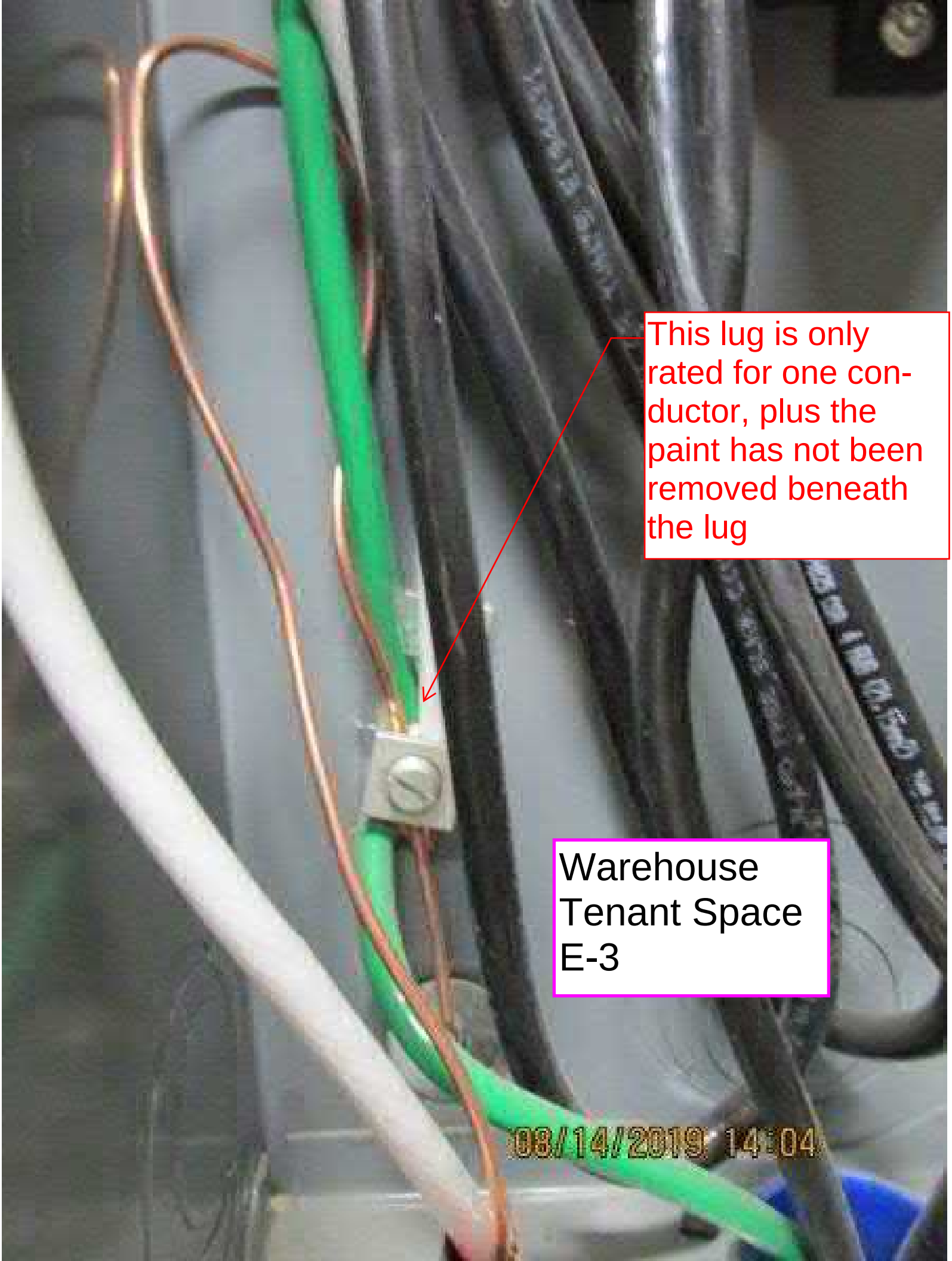

TRUCKEE
ROUNDHOUSE
TURN TANK
OFF
Warehouse
Tenant Space
E-3
08/14/2019 14:02

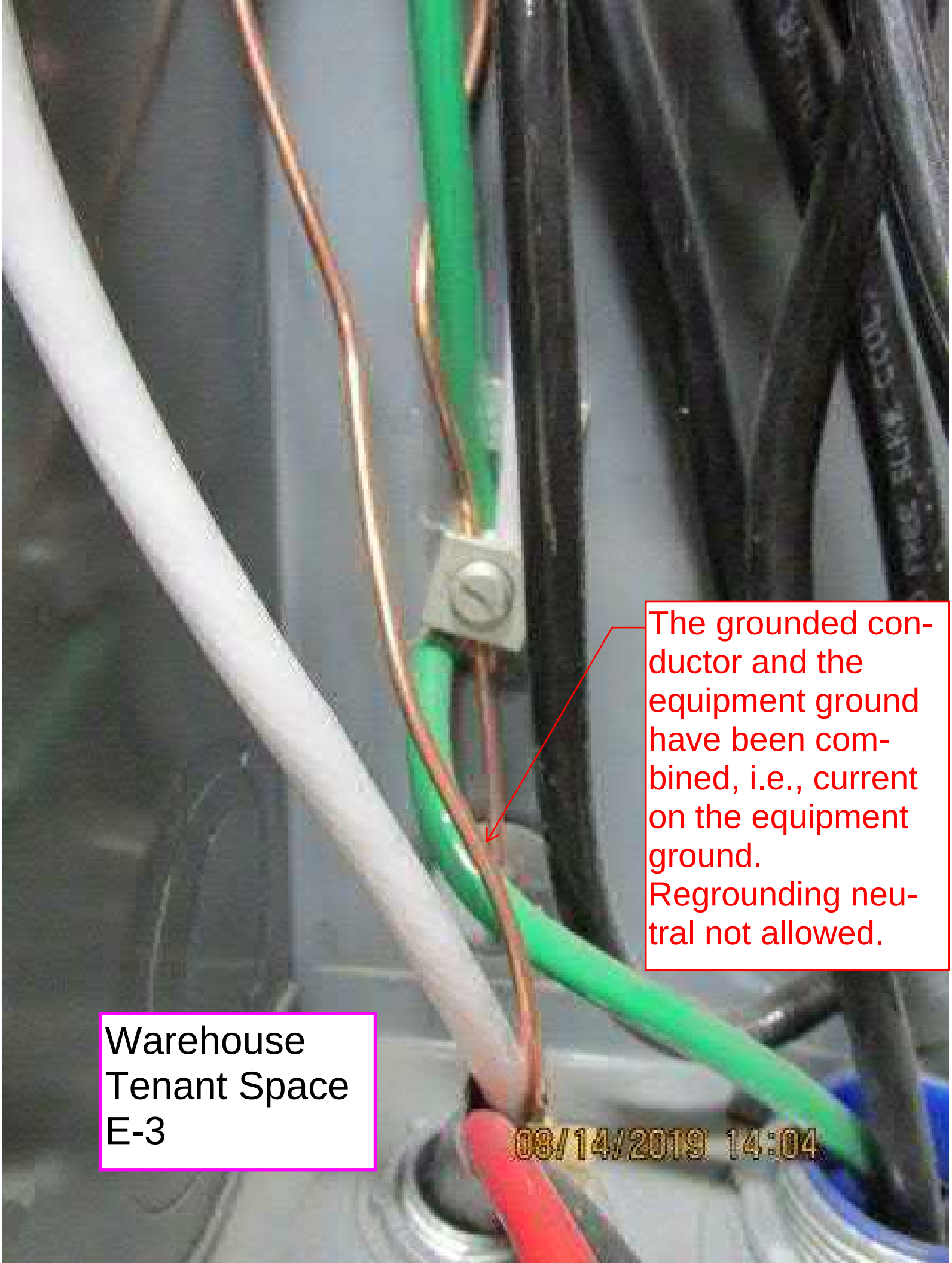

A disconnect is re-quired
Warehouse Tenant Space E-3
08/14/2019 14:02


No disconnect within sight
Warehouse Tenant Space E-3
08/14/2019 14:03


Conduit not sup-
ported
Warehouse
Tenant Space
E-3
08/14/2019 14:03

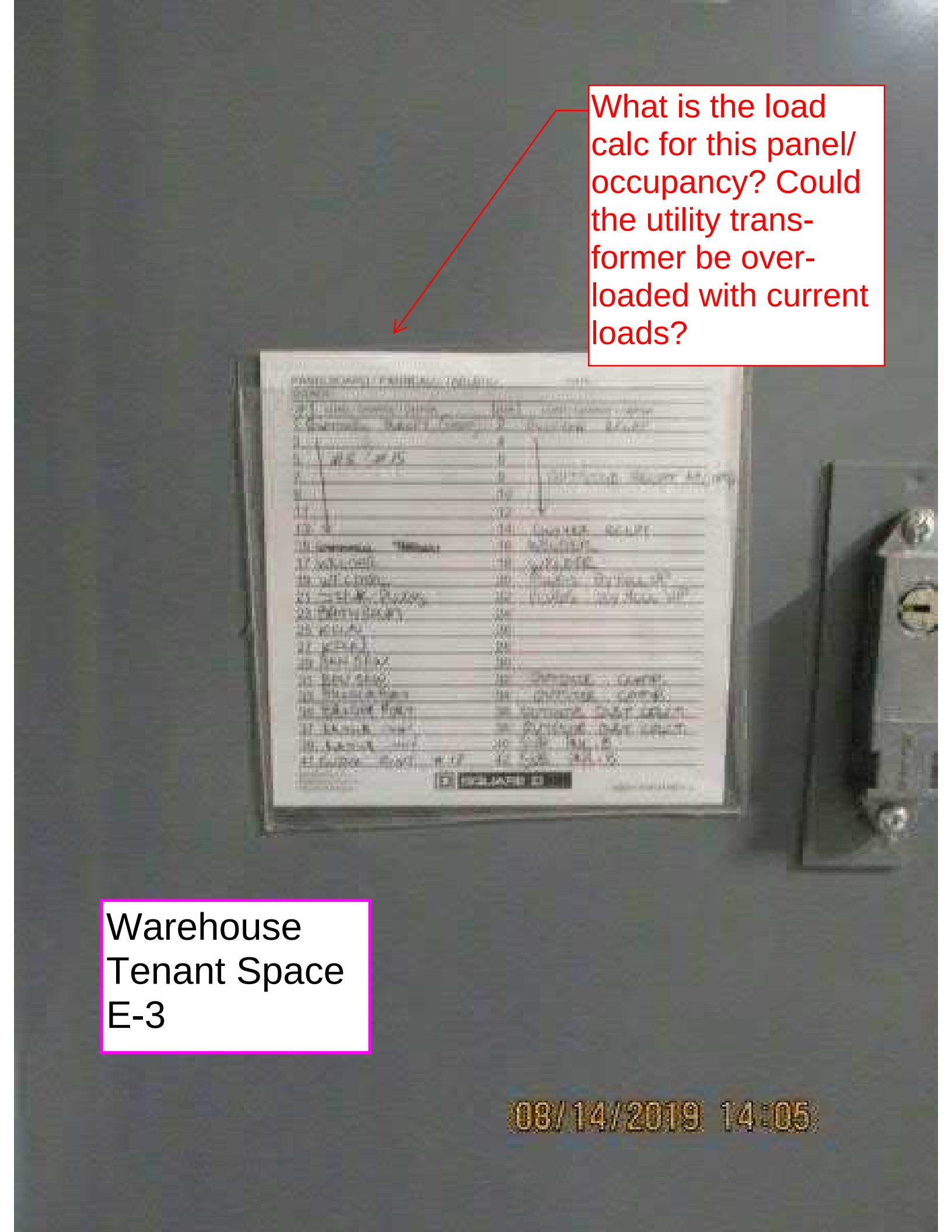

Warehouse
Tenant Space
E-3
White conductor identified as a grounded conduc-tor but utilized as an equipment ground conductor (should be green)
Two wires in lug rated for one wire
Paint not removed from beneath lug and lug has multiple conductors when only rated for one conductor
Cable overfills the raceway


This lug is only rated for one con-ductor, plus the paint has not been removed beneath the lug
Warehouse Tenant Space E-3
08/14/2019 14:04

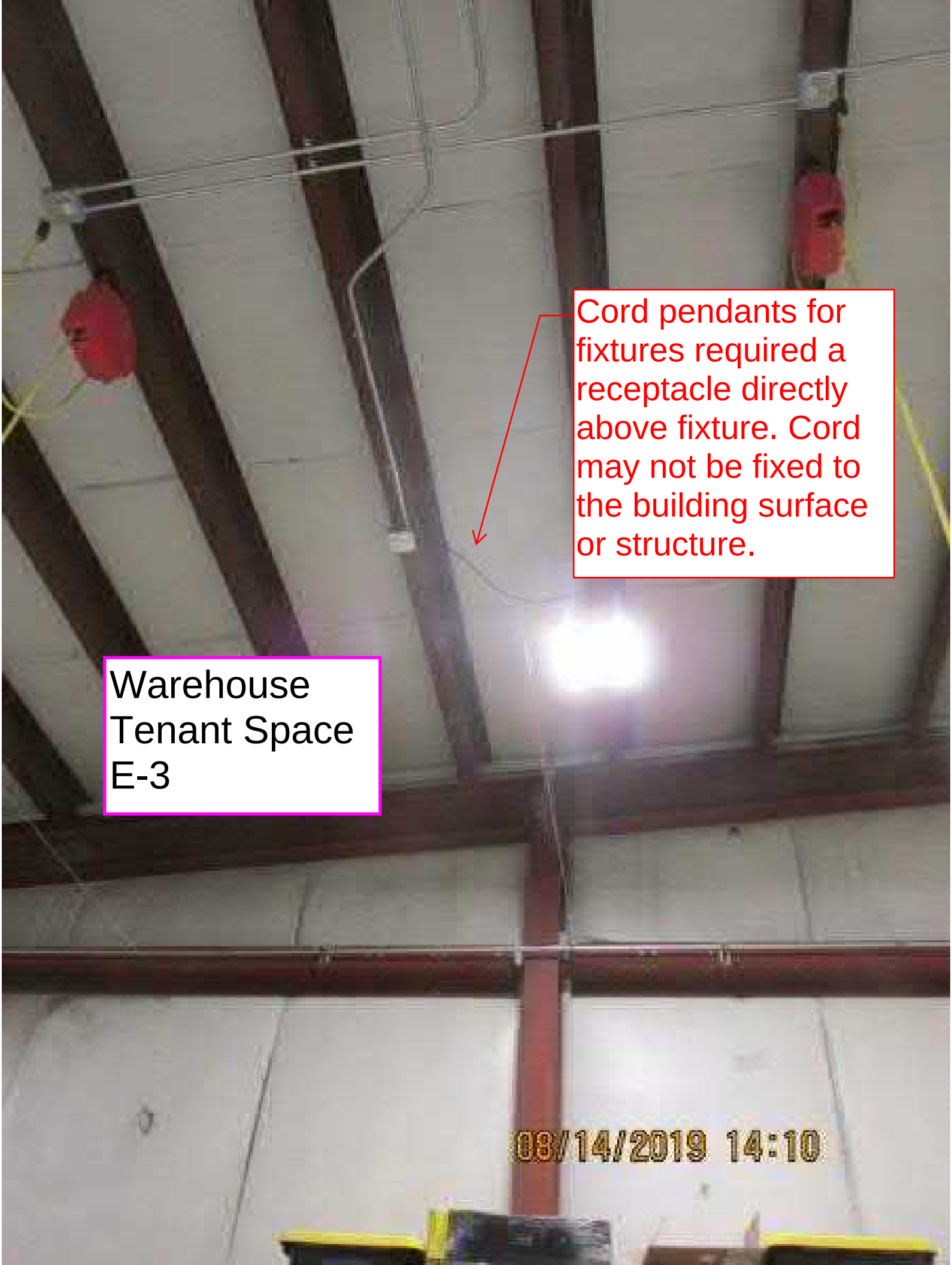

The grounded conductor and the equipment ground have been combined, i.e., current on the equipment ground. Regrounding neutral not allowed.
Warehouse
Tenant Space
E-3
08/14/2019 14:04

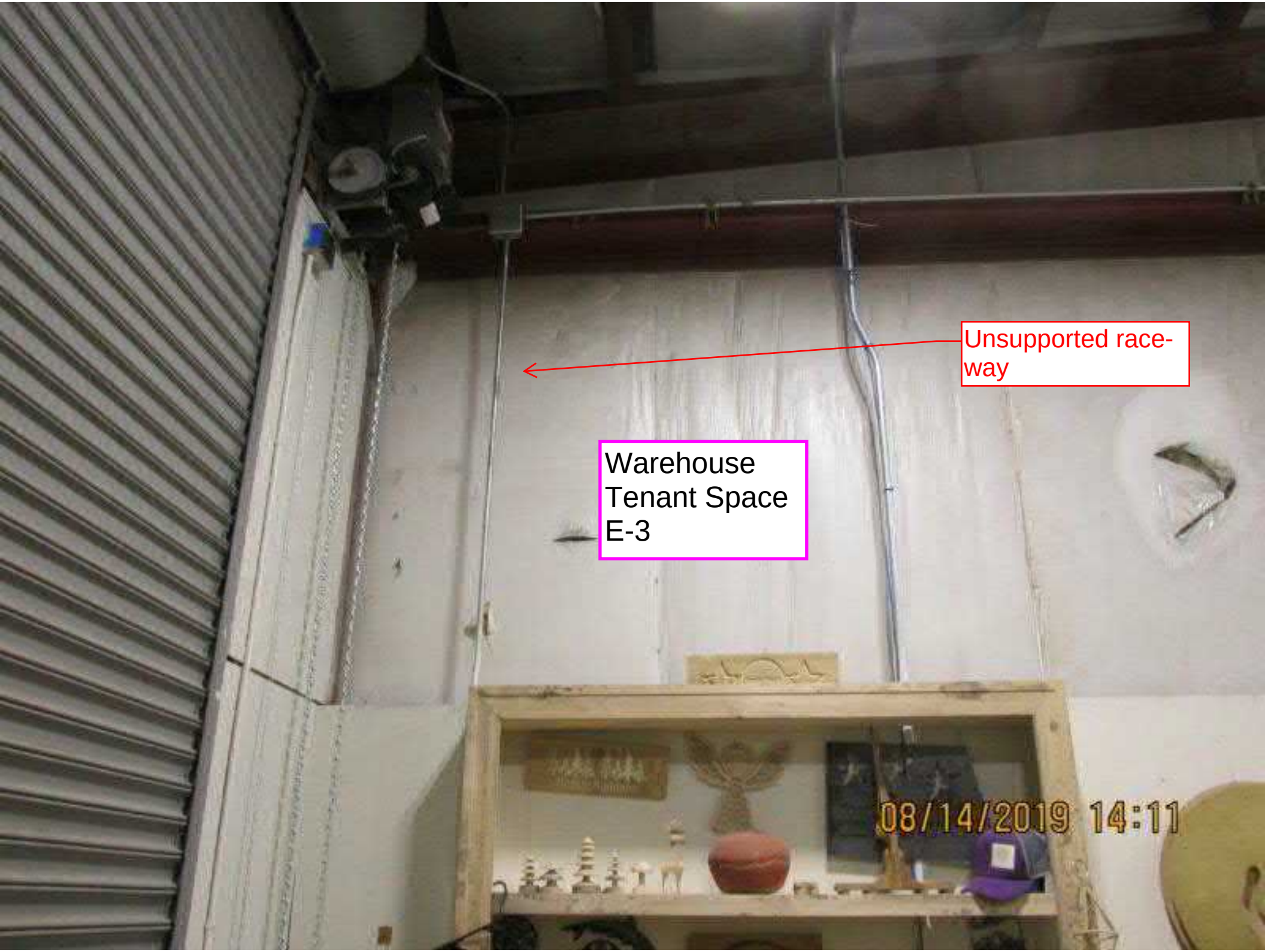

CLEANING
PROCESS
GFCI outlets re-
quired within 6 ft of
sink
Warehouse
Tenant Space
E-3
08/14/2019 14:04

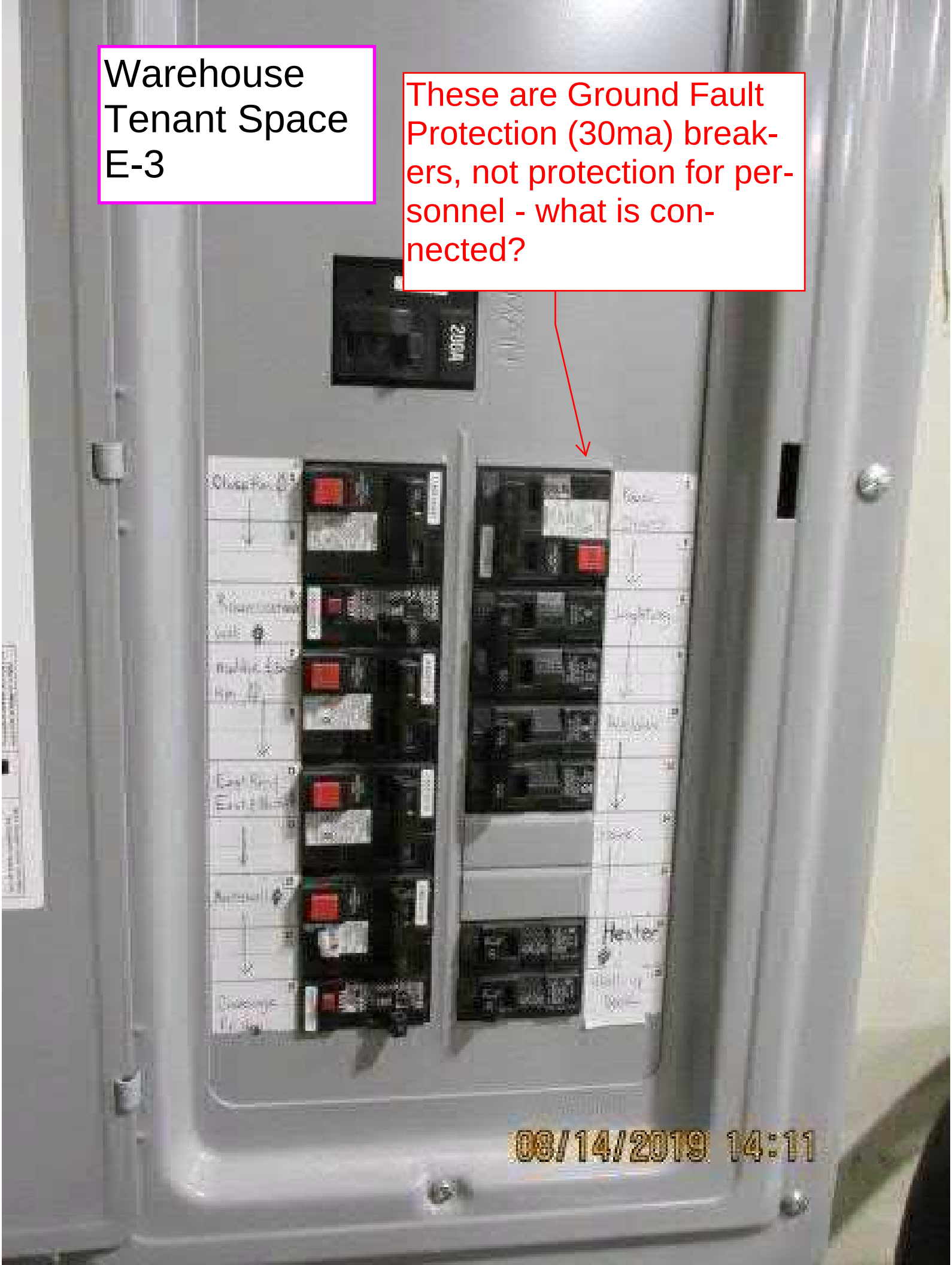
Warehouse
Tenant Space
E-3


What is the load calc for this panel/ occupancy? Could the utility trans-former be over-loaded with current loads?
Warehouse Tenant Space E-3
08/14/2019 14:05


Warehouse
Tenant Space
E-3
Box is overfilled -
larger box required.
08/14/2019 14:07


Cord pendants for fixtures required a receptacle directly above fixture. Cord may not be fixed to the building surface or structure.
Warehouse Tenant Space E-3
08/14/2019 14:10


Unsupported race-way
Warehouse Tenant Space E-3
08/14/2019 14:11

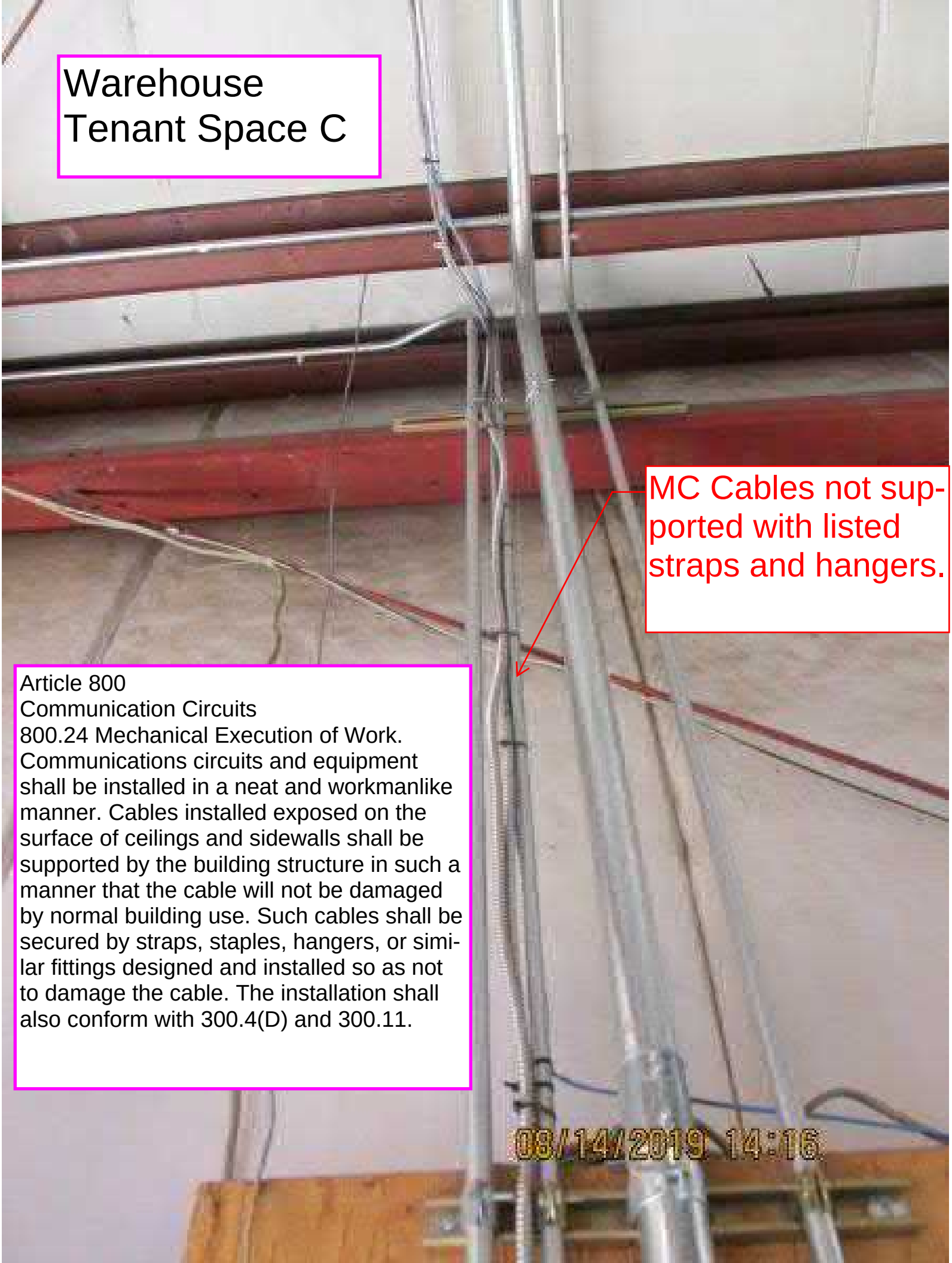

Warehouse
Tenant Space
E-3
These are Ground Fault Protection (30ma) breakers, not protection for personnel - what is connected?
08/14/2019 14:11


Outlet required to be directly above the fixture
Warehouse Tenant Space E-3
08/14/2019 14:12

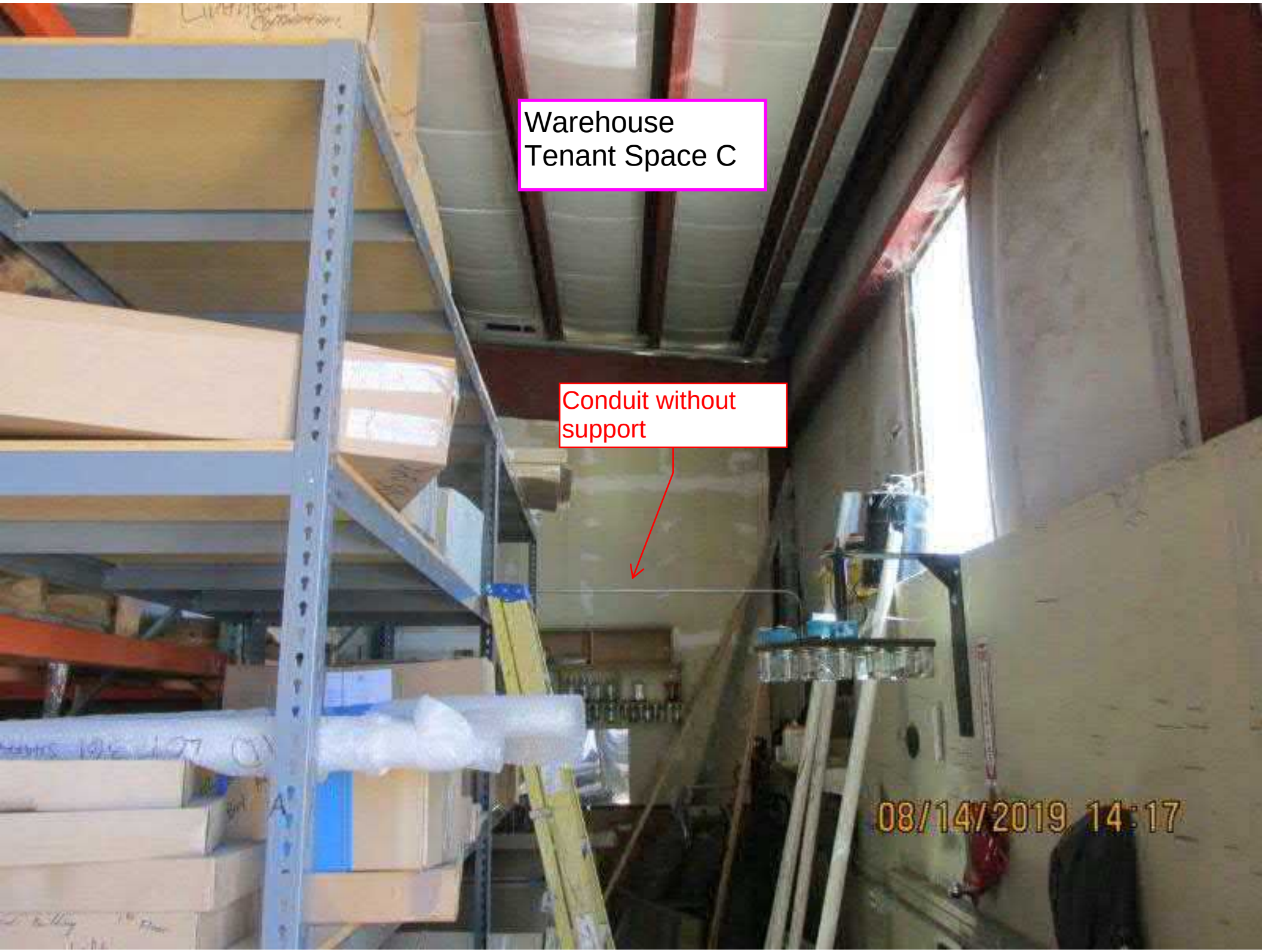
Warehouse
Tenant Space
C


Cables not sup-
ported
C
PORTERS
Warehouse
Tenant Space C
SKI
PORTERS
TAHOE...
RIDE
PORTERS
TAHOE...
08/14/2019 14:16


This breaker not listed for use in this load center
Warehouse Tenant Space C
08/14/2019 14:16


Warehouse
Tenant Space C
MC Cables not supported with listed straps and hangers.
Article 800
Communication Circuits
800.24 Mechanical Execution of Work.
Communications circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by straps, staples, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also conform with 300.4(D) and 300.11.
08/14/2019 14:16

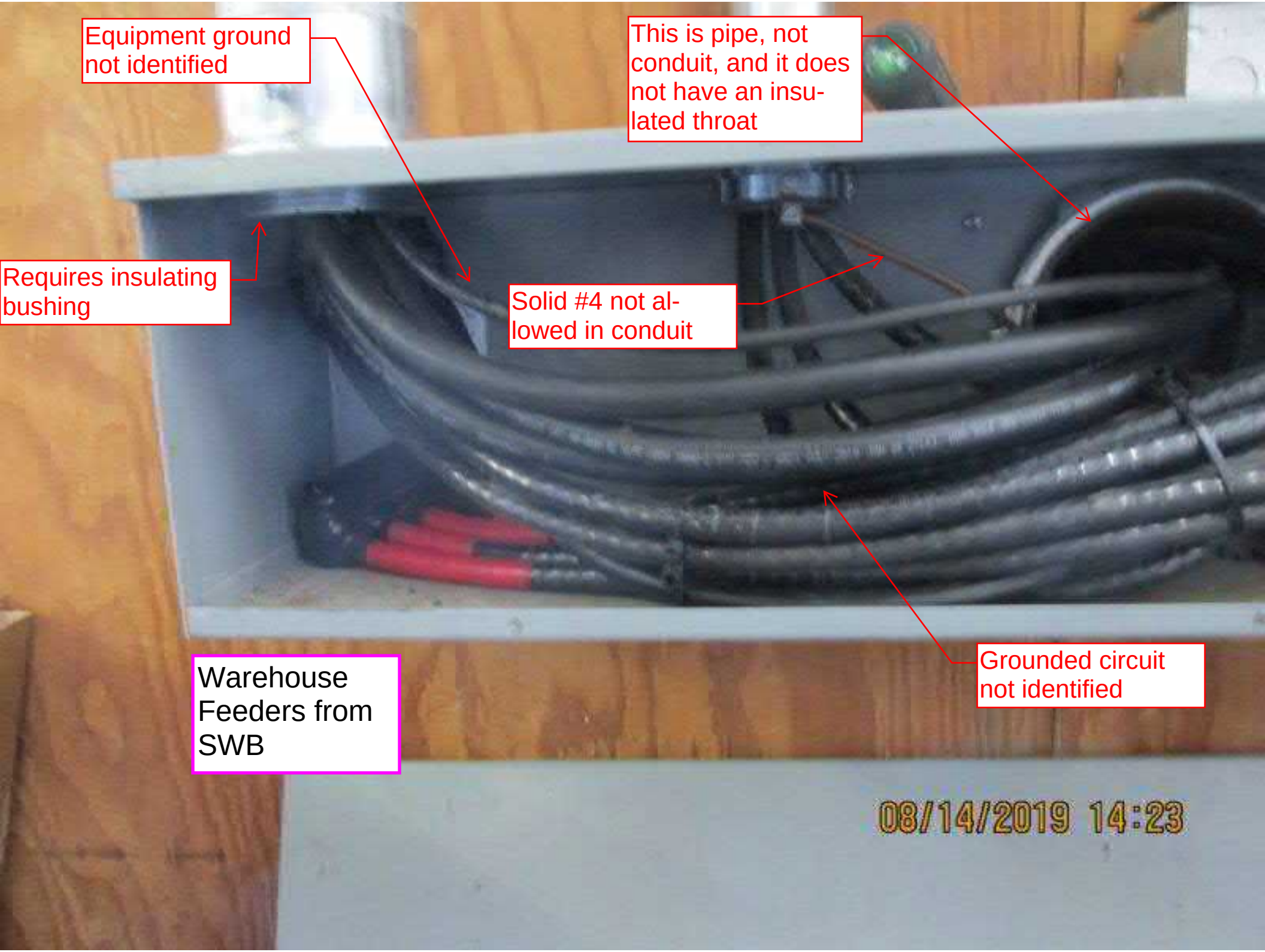

Cables not sup-
ported with listed
straps and hangers.
Warehouse
Tenant Space C
09/14/2019 14:16


Warehouse
Tenant Space C
Conduit without support
08/14/2019 14:17

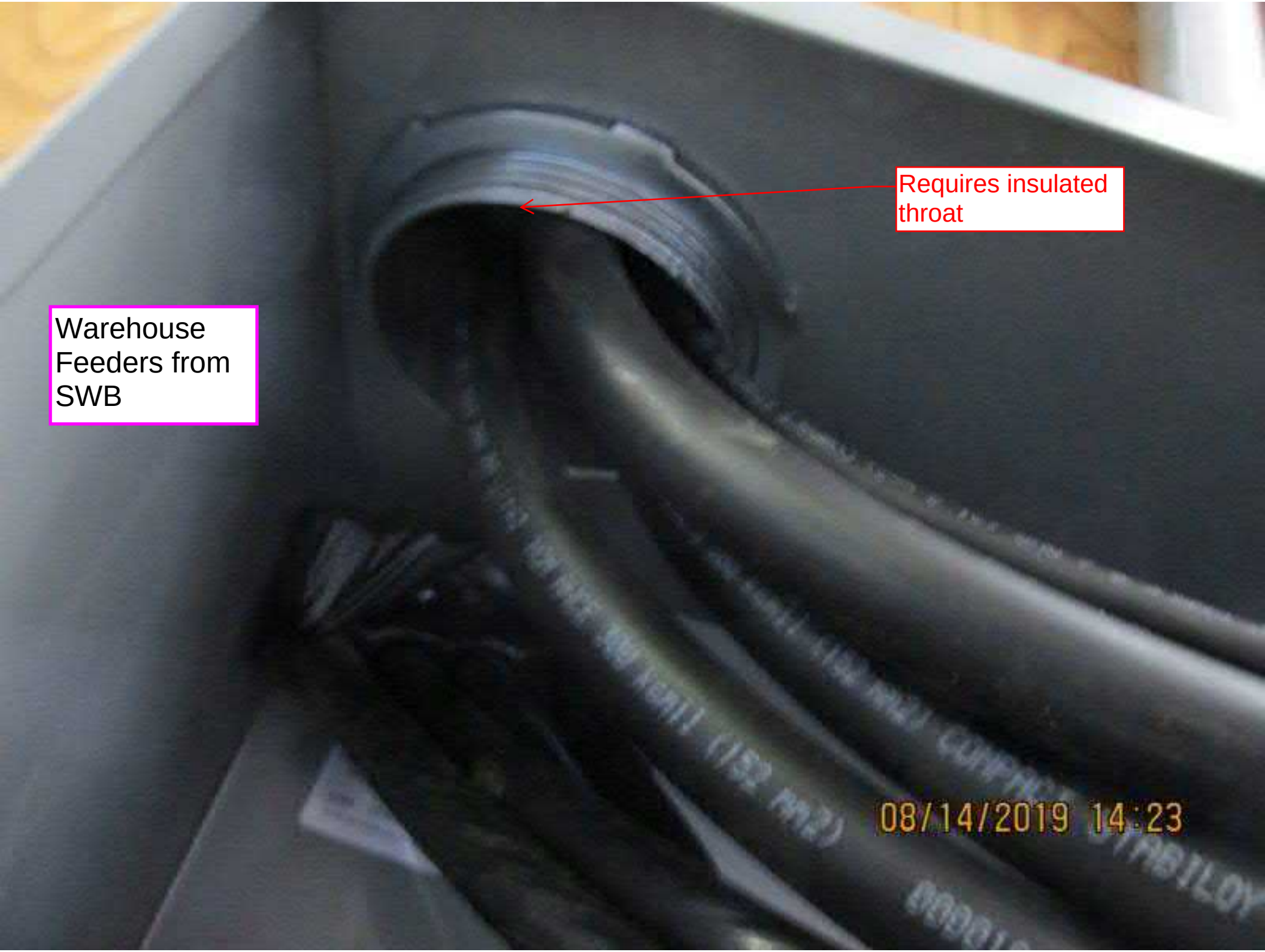

Raceway cover not fully on
Warehouse Tenant Space C
08/14/2019 14:17

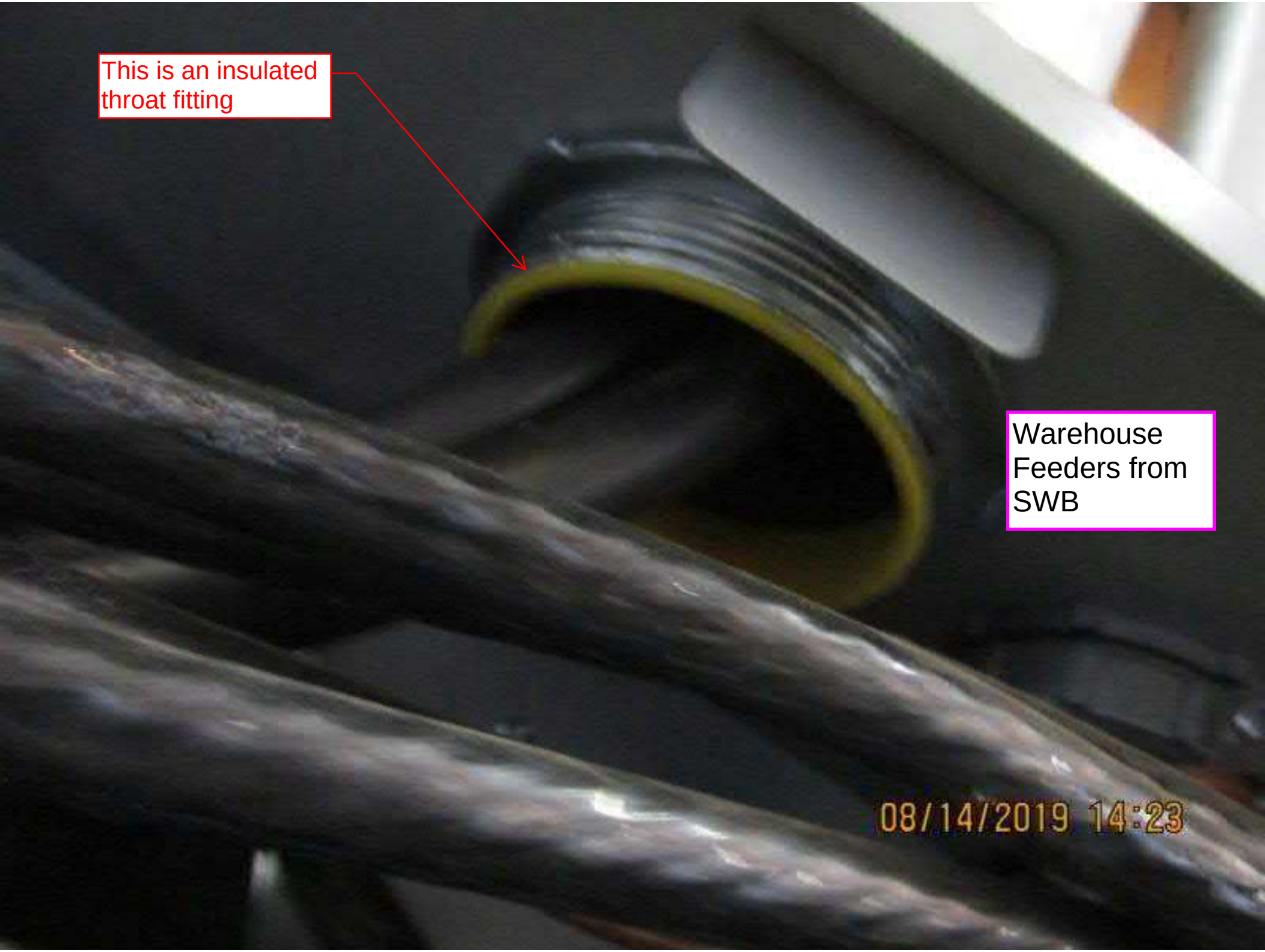

Warehouse
SWB
08/14/2019 14:21


Warehouse Feeders from SWB
Support?
08/14/2019 14:21


Equipment ground not identified
This is pipe, not conduit, and it does not have an insulated throat
Requires insulating bushing
Solid #4 not allowed in conduit
Grounded circuit not identified
Warehouse Feeders from SWB
08/14/2019 14:23


If #6 this conductor needs green insula-tion
Warehouse Feeders from SWB
08/14/2019 14:23


Requires insulated throat
Warehouse Feeders from SWB
08/14/2019 14:23


This is an insulated throat fitting
Warehouse Feeders from SWB
08/14/2019 14:23


DANGER
A
B
C
D
E
F
Warehouse
SWB: Distri-
bution
08/14/2019 14:27


Warehouse
House Panel
If this goes to a fuel dispenser it requires a switched neutral
08/14/2019 14:27


Maintenance
Building
Addition
- MBA
Maintenance
Building
- MB
08/14/2019 14:28

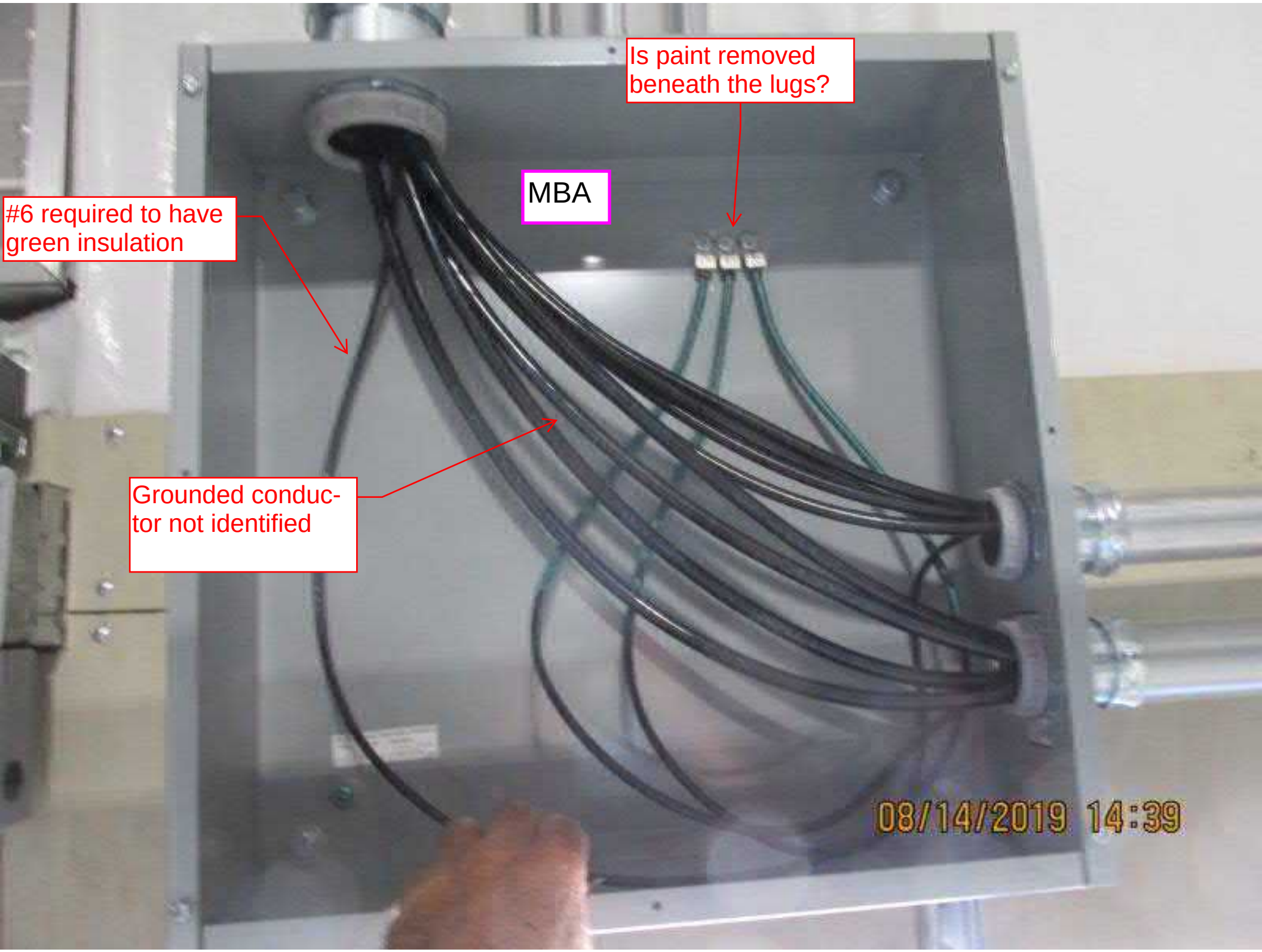

MBA
Class 2 wiring run with power wiring
08/14/2019 14:32

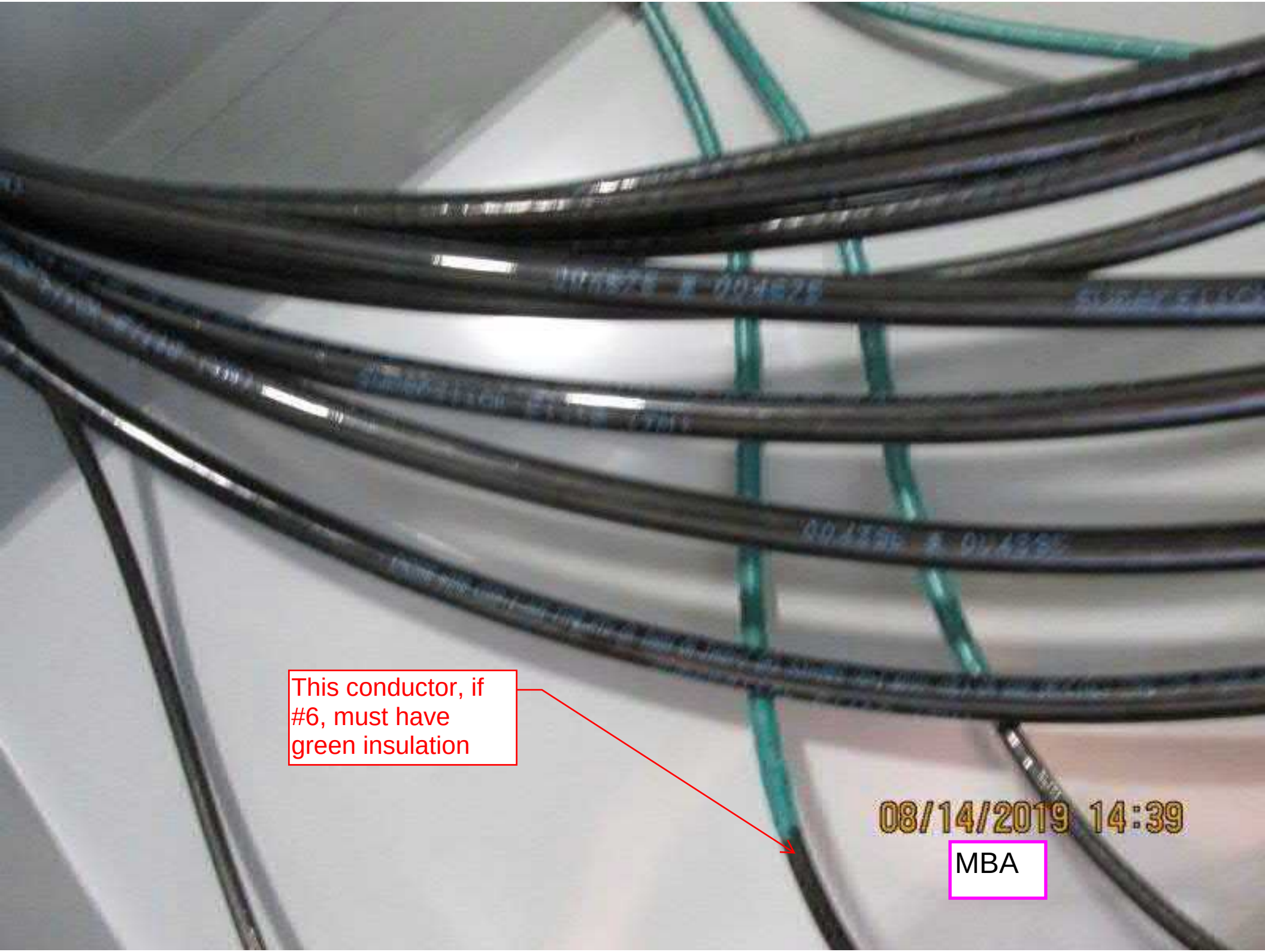
MBA

Outlet ring must be flush with a combustible surface

08/14/2019 14:33


Outlet required to be directly above the fixture
MBA
08/14/2019 14:36


Is paint removed beneath the lugs?
MBA
#6 required to have green insulation
Grounded conduc-tor not identified
08/14/2019 14:39

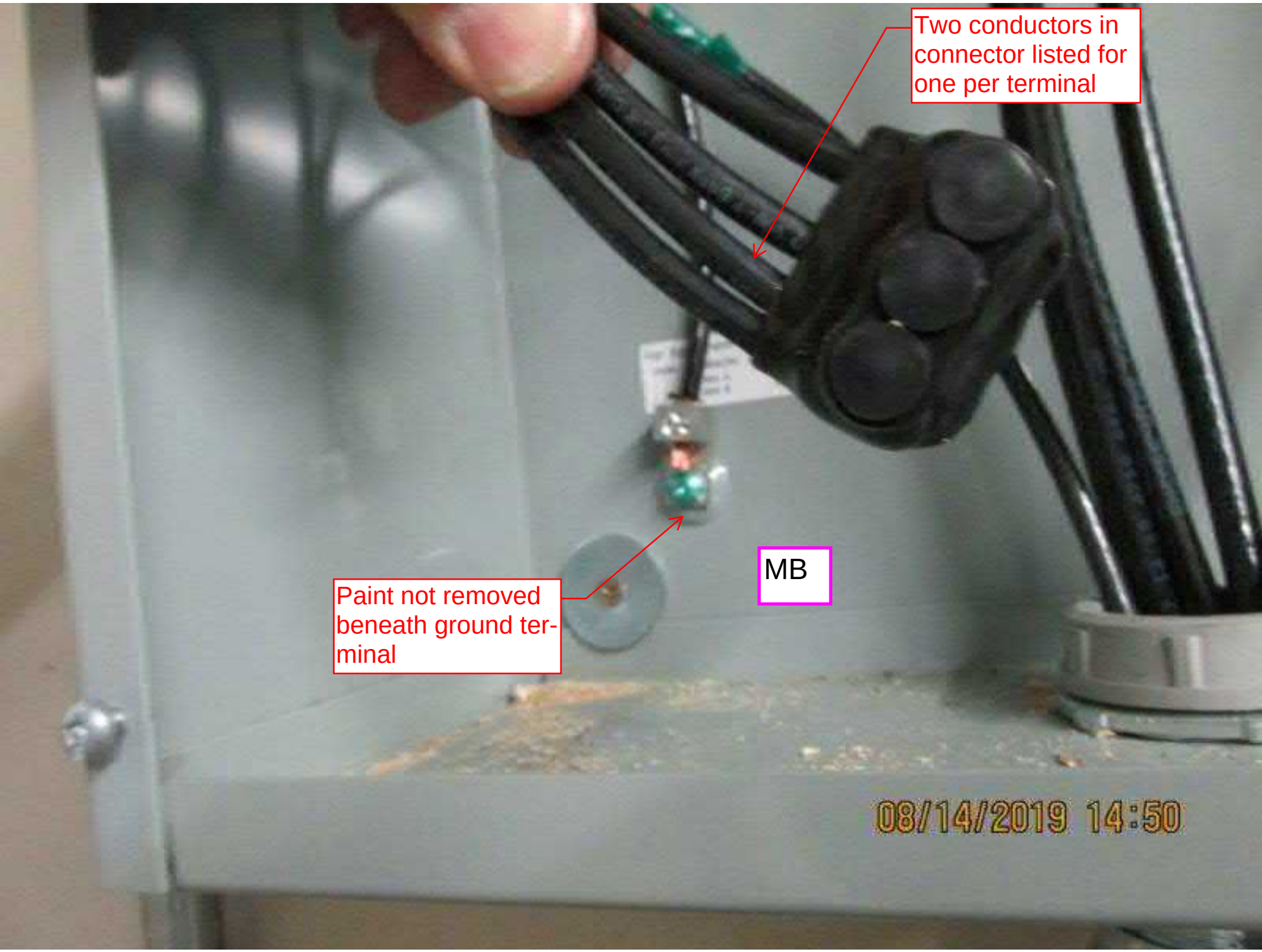

This conductor, if #6, must have green insulation
08/14/2019 14:39
MBA


Class 2 in the same raceway with power. No protec-tive bushing on the end of the raceway
MBA
08/14/2019 14:41


MBA
MC cable not sup-
ported with listed
hangers/straps
08/14/2019 14:43

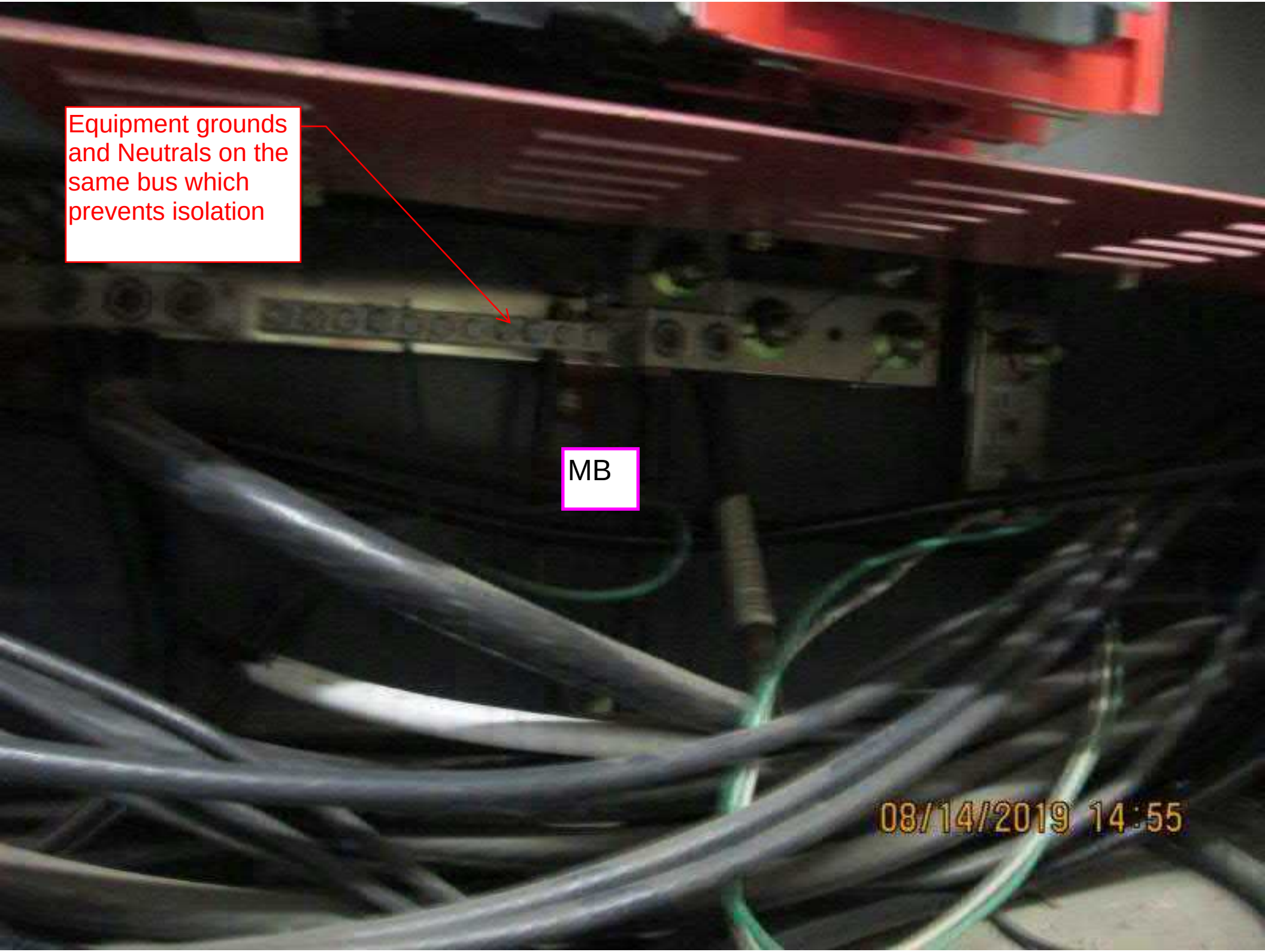

MBA
MC cable not sup-
ported with listed
products
08/14/2019 14:43

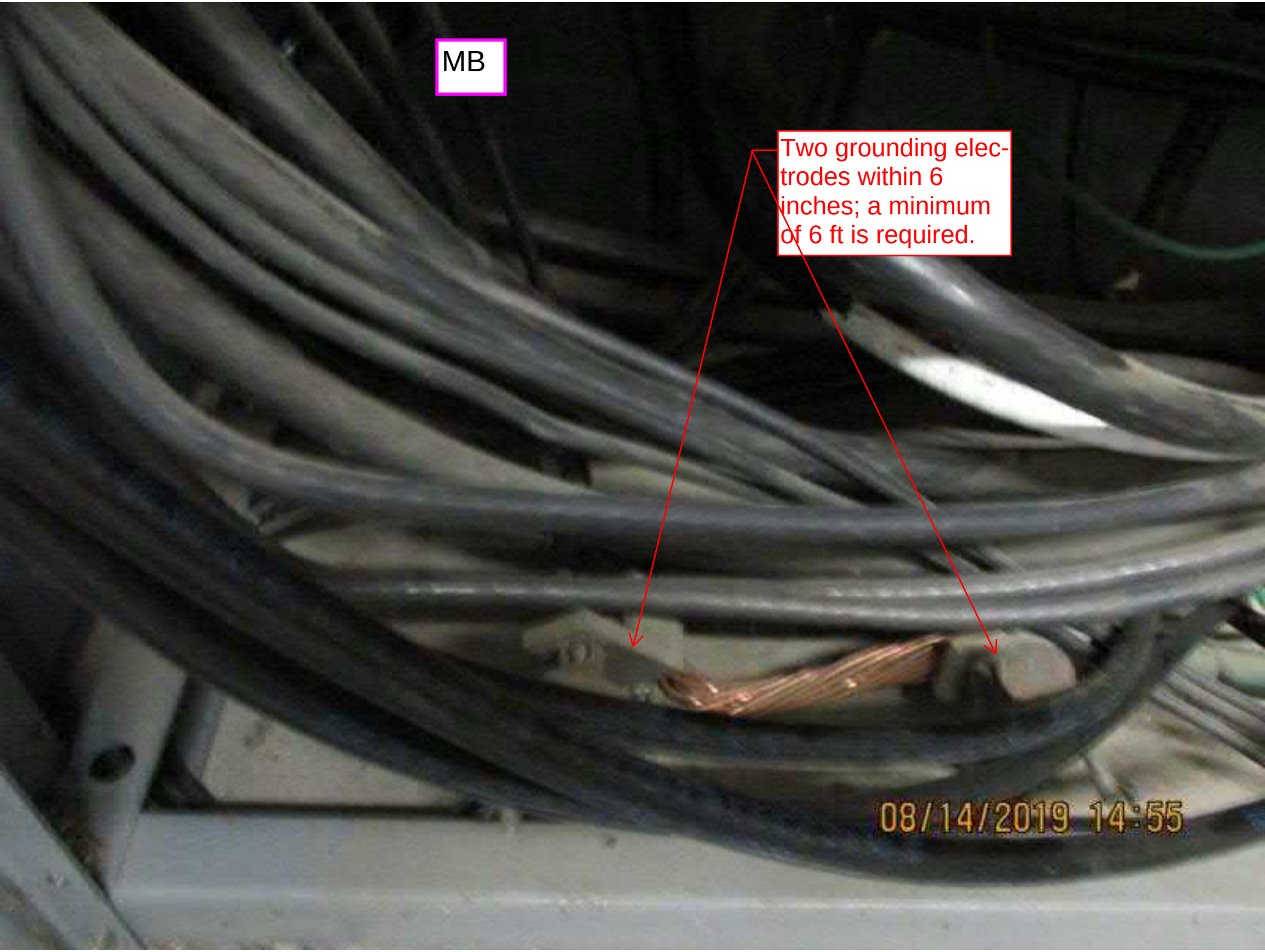

Sheet metal screw is not allowed for grounding
MBA
08/14/2019 14:47


Two conductors in connector listed for one per terminal
MB
Paint not removed beneath ground terminal
08/14/2019 14:50


MB
08/1
Anchors not installed - compromises seismic performance, and/or not per manufacturer's in-stall. instructions


MB
Anchors not in-stalled-vulnerable to seismic event
08/14/2019 14:54

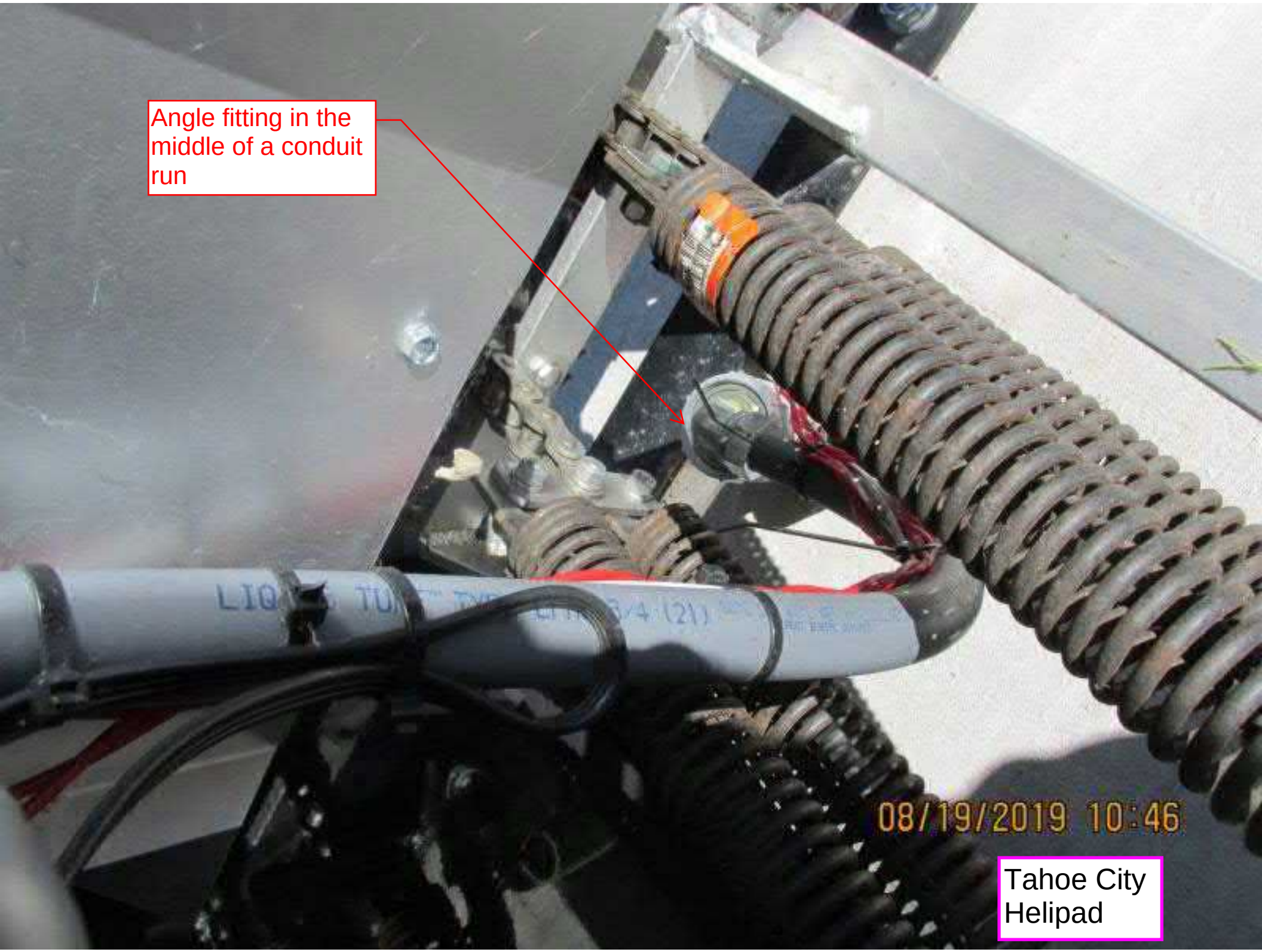

Equipment grounds and Neutrals on the same bus which prevents isolation
MB
08/14/2019 14:55


MB
Two grounding electrodes within 6 inches; a minimum of 6 ft is required.
08/14/2019 14:55


NO PARKING
Tahoe City Helipad
08/19/2019 10:45

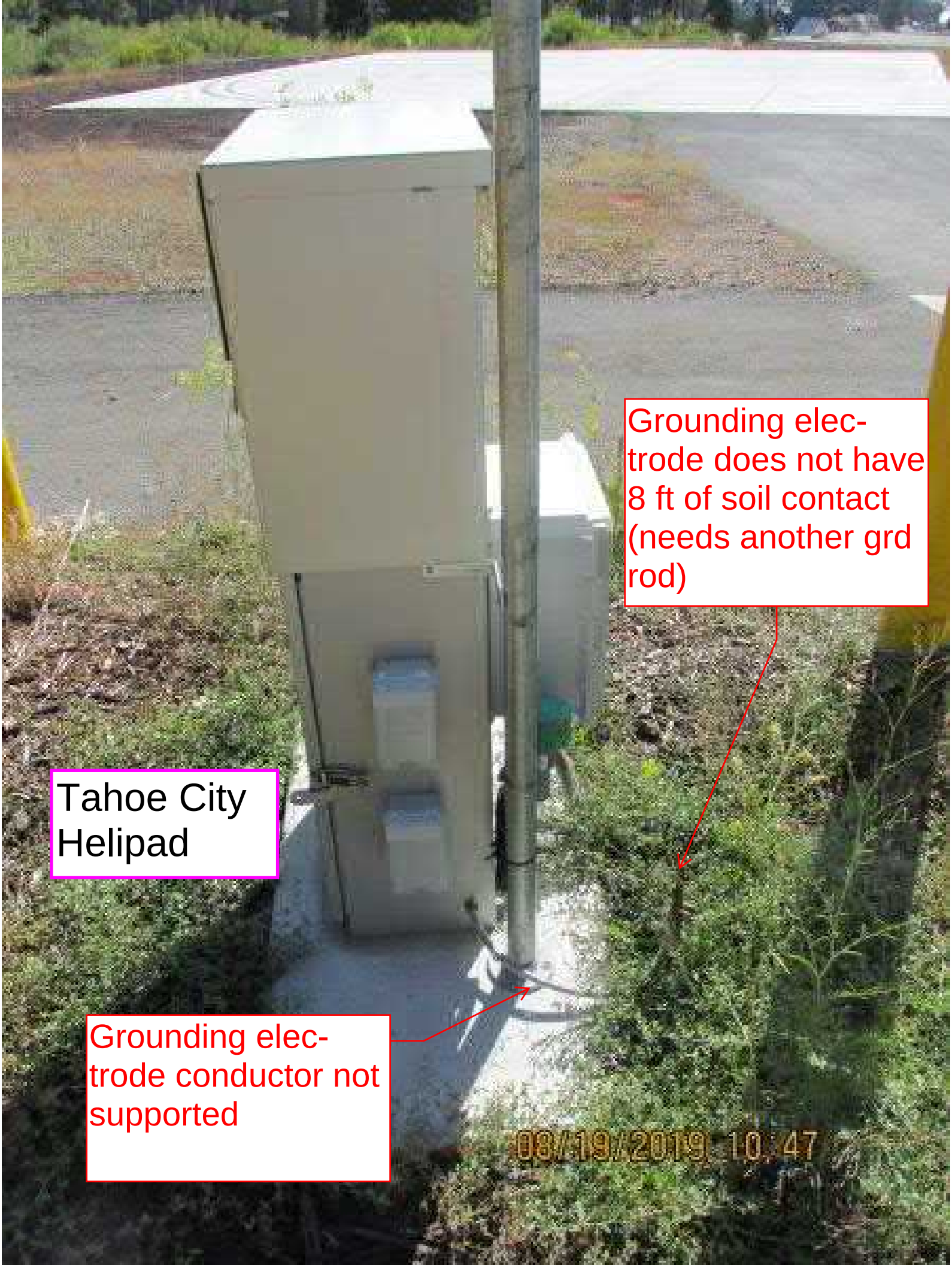

Tahoe City
Helipad
08/19/2019 10:45


POWER SWITCH
Tahoe City Helipad
Insert 1/4" stainless steel or engineering plastic spacers between concrete and enclosure bottom rail. Fill gap with silicone caulk (Silastic).
08/19/2019 10:46

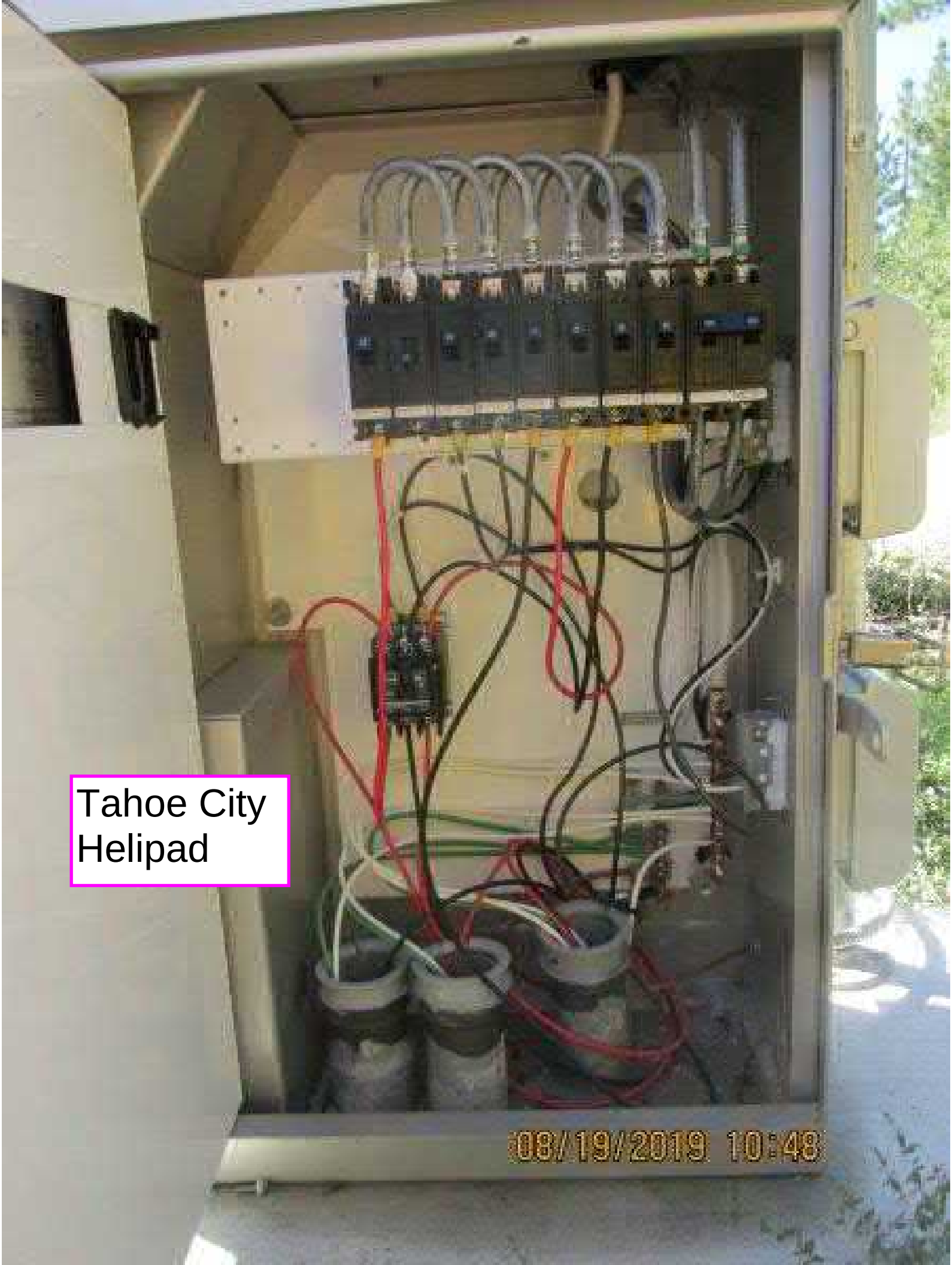

Angle fitting in the middle of a conduit run
08/19/2019 10:46
Tahoe City Helipad


Insert 1/4" ss or engi-
neering plastic spacer
between enclosure
bottom rail and con-
crete pad. Fill gap with
silicone caulk
(Silastic)
Tahoe City
Helipad
08/19/2019 10:47


No support
Tahoe City
Helipad
08/19/2019 10:47


Grounding elec-
trode does not have
8 ft of soil contact
(needs another grd
rod)
Tahoe City
Helipad
Grounding elec-
trode conductor not
supported
08/19/2019 10:47


Grounding electrode does not have 8ft of soil contact. This most likely will require an additional ground rod to be compliant
Tahoe City Helipad
08/19/2019 10:47


Tahoe City
Helipad
08/19/2019 10:48


Tahoe City
Helipad
08/19/2019 10:48

Replace LED and lens damaged by snow removal operations

New LED and lens looks like this.

08/19/2019 10:53

Tahoe City Helipad


Another damaged LED and lens. Perhaps a different version, or recessing below grade is needed.
Tahoe City Helipad
08/19/2019 10:53


Tahoe City
Helipad
08/19/2019 10:54

2013
Inspection

S.A. Engineering

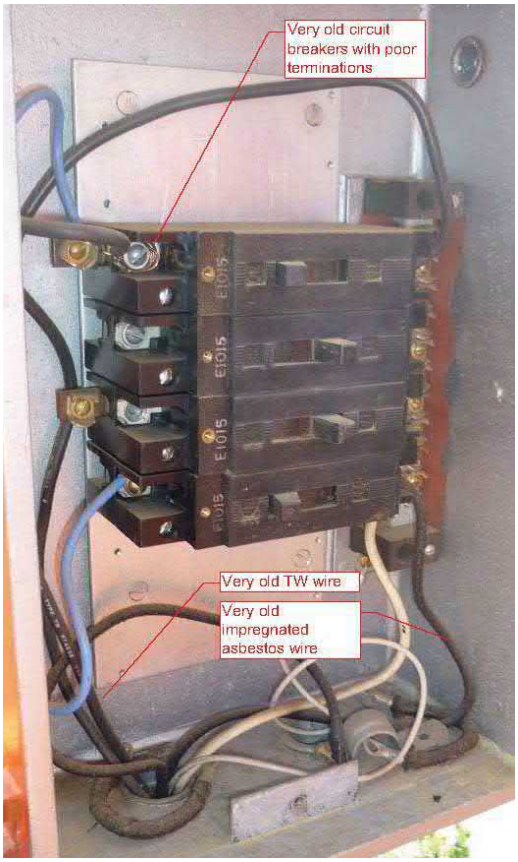
Electrical Engineering ♦ Control Design ♦ SCADA Design ♦ Water & Wastewater Controls

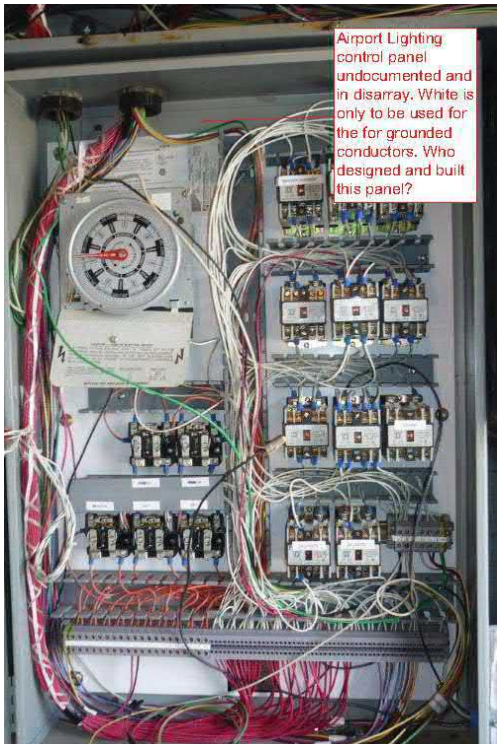
TTAD Airport Beacon Electrical Survey

The three beacon sites were visited. The original wiring appears to be about 50years old. There have been many modifications over the years that have compromised the original job, but were needed to facilitate the addition of new equipment, chiefly radios.

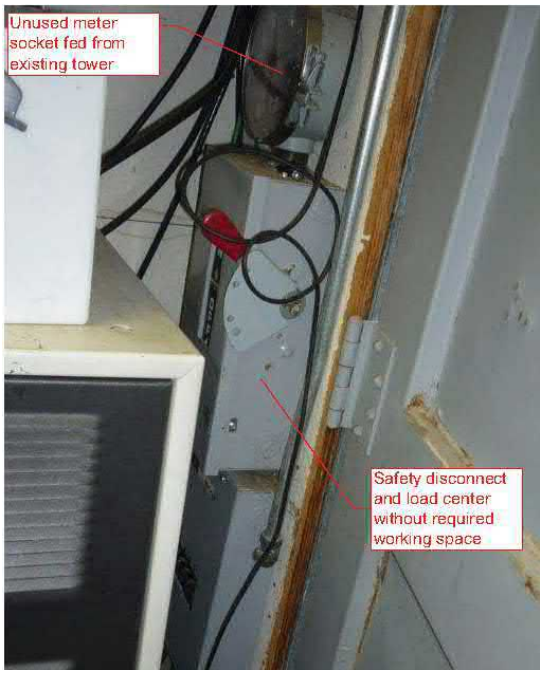
There are many NEC compliance issues that require work to make the beacon sites safe for maintenance employees. Specifics: 1. There are equipment locations that do not meet the working space requirements required by the NEC and OSHA. 2. There are extremely old conductors and apparatus (load centers) still in use that should be replaced. 3. There are installations where maintenance personnel used unlisted products when reconfiguring the electrical distribution wiring - these need to be removed from the system. 4. There are many raceways without required supports. In short, the electrical systems for all three towers should be replaced.

See attached pictures with annotation.

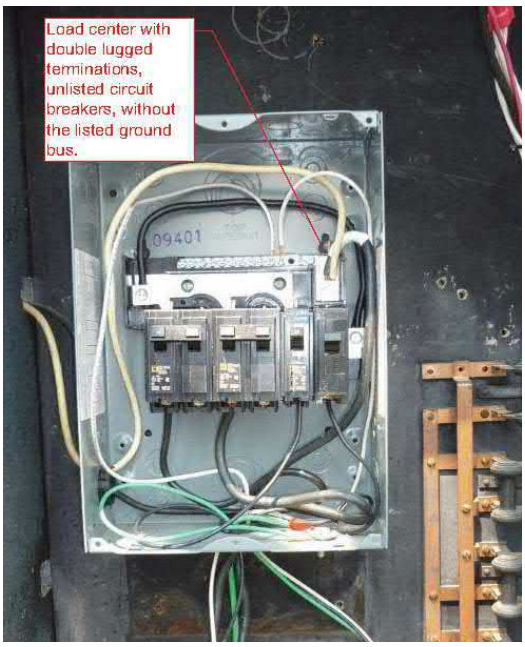




12003 Ski Run Road ♦ Drawer 2469 ♦ Truckee, CA 96160 ♦ 530-587-4725♦ esandel@sa-eng.com



12003 Ski Run Road ♦ Drawer 2469 ♦ Truckee, CA 96160 ♦ 530-587-4725♦ esandel@sa-eng.com



12003 Ski Run Road ♦ Drawer 2469 ♦ Truckee, CA 96160 ♦ 530-587-4725♦ esandel@sa-eng.com

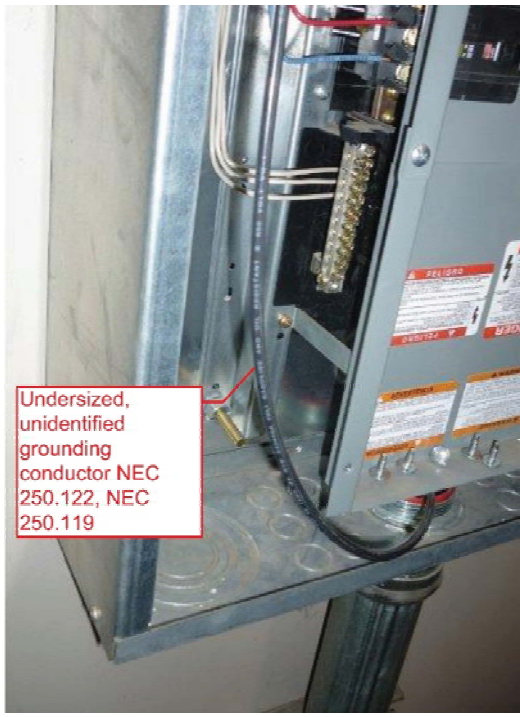
2013
INSPECTION

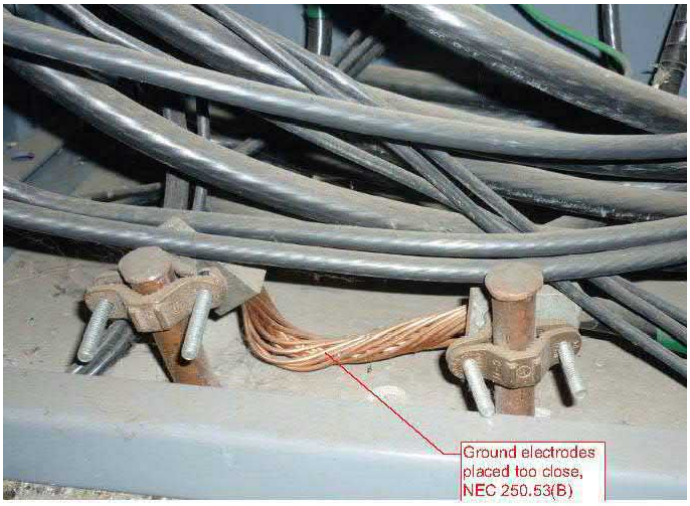
West Side Modular

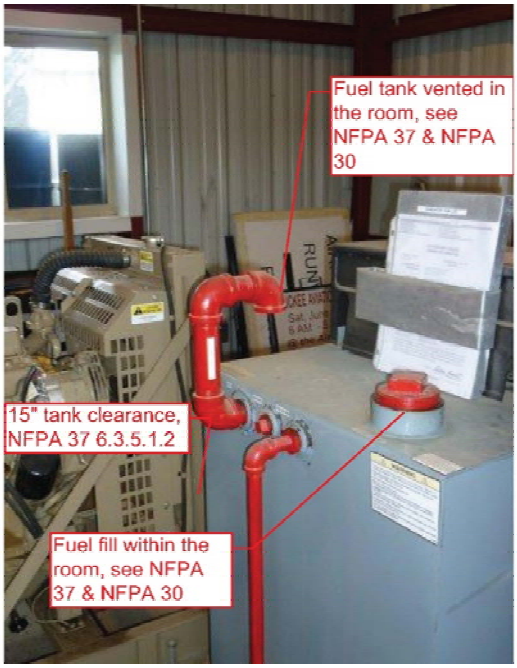
2013 INSPECTION

Truckee Tahoe Airport District

Maintenance Building



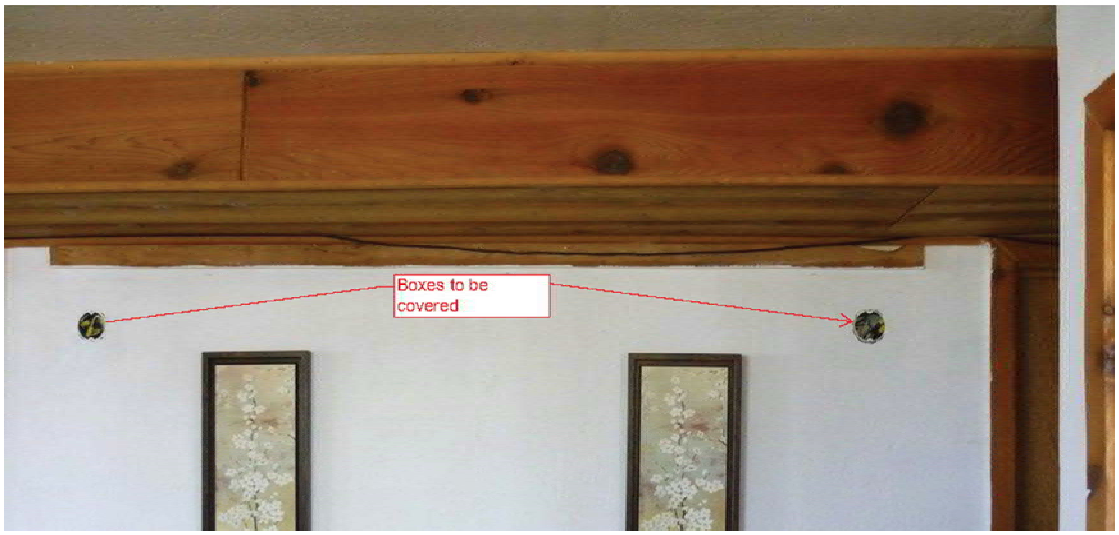




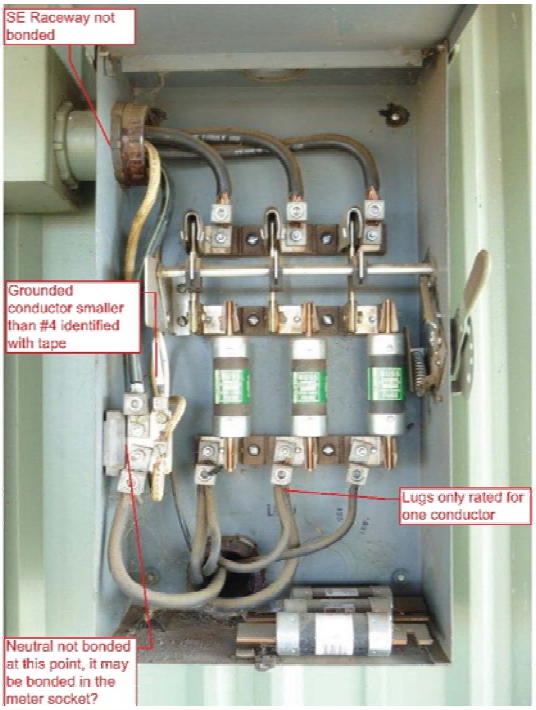
2013 INSPECTION

FBO


Cord in the ceiling tile
Unsupported box


Boxes to be covered

Hangar 1



2013 INSPECTION

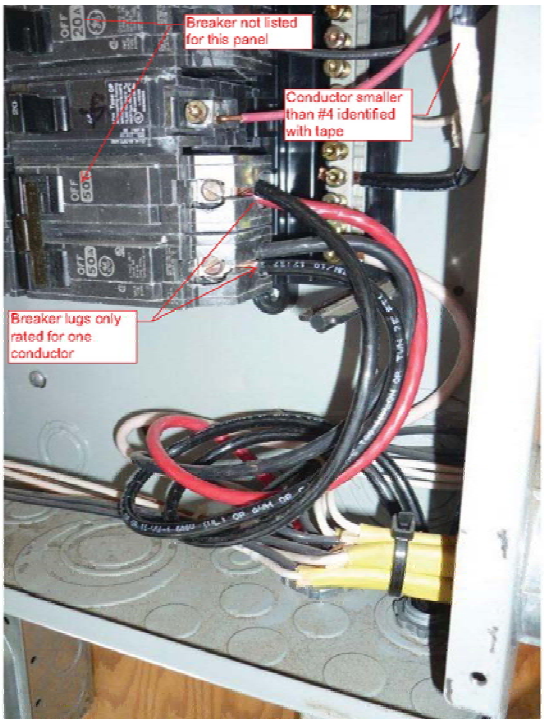
Truckee Tahoe Airport District

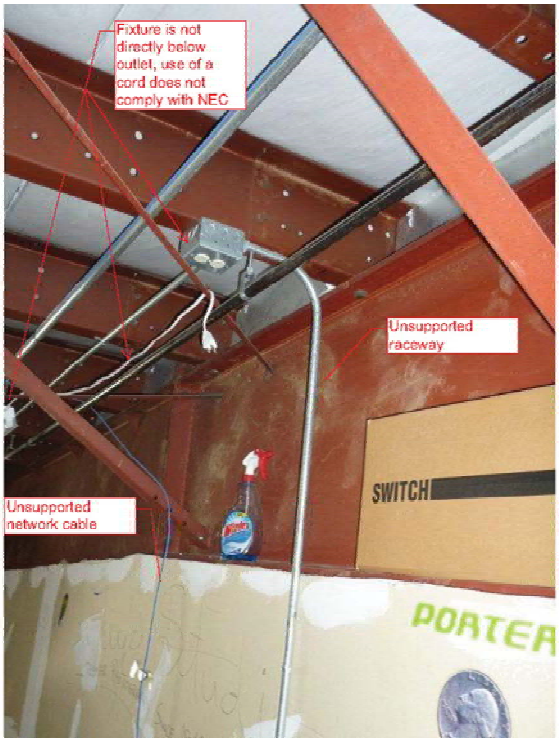
Garage West Side

2013 INSPECTION

Truckee Tahoe Airport District

Warehouse

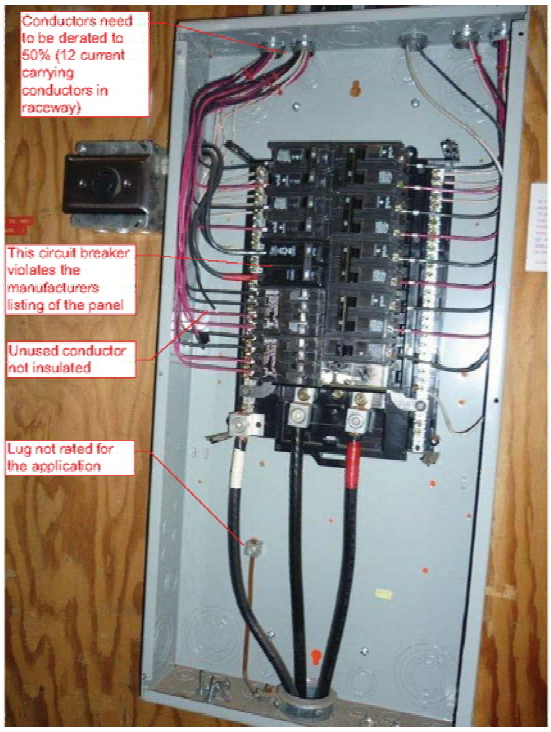


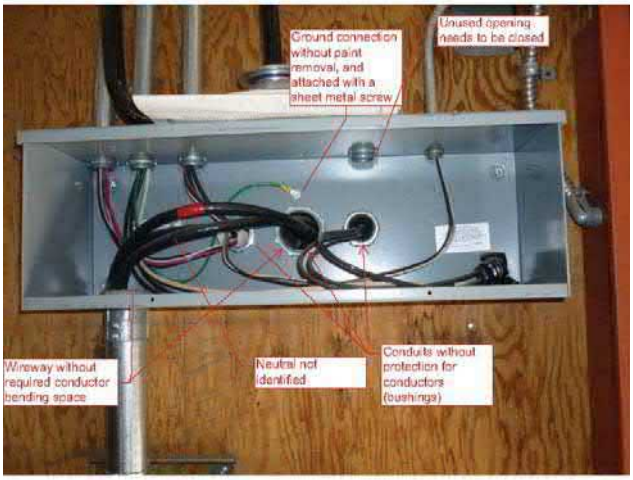


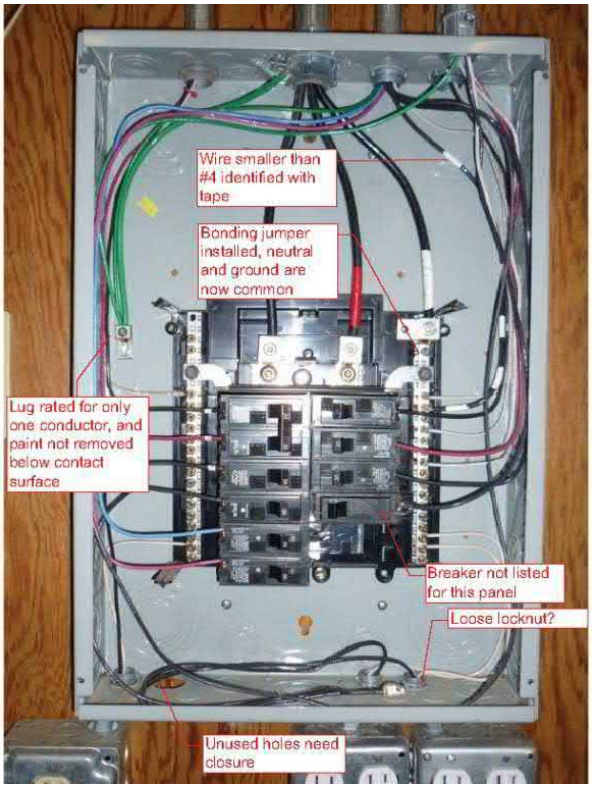
2013 INSPECTION

Truckee Tahoe Airport District

Warehouse



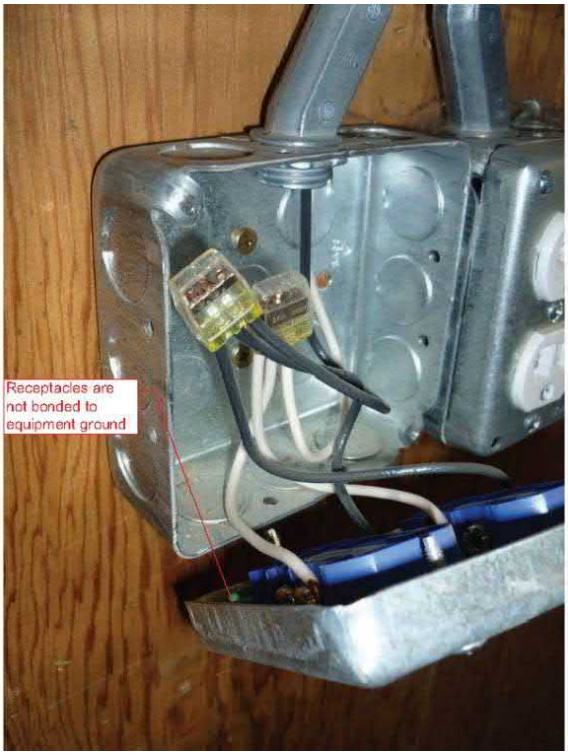


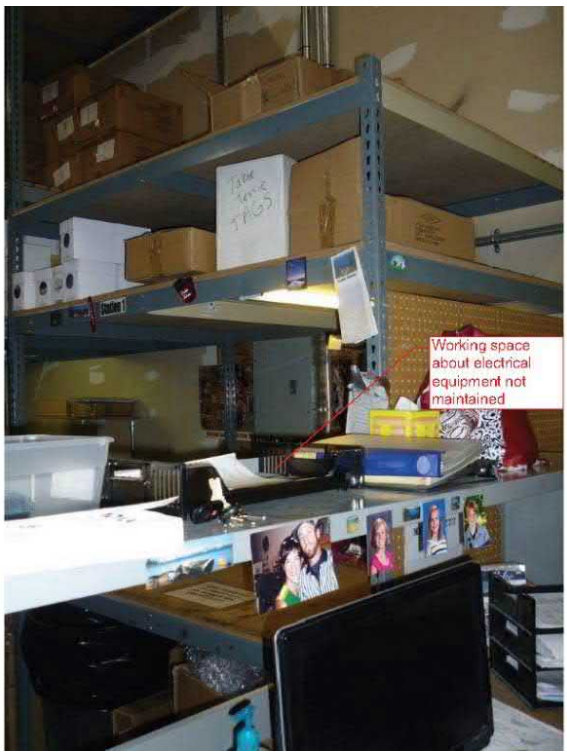


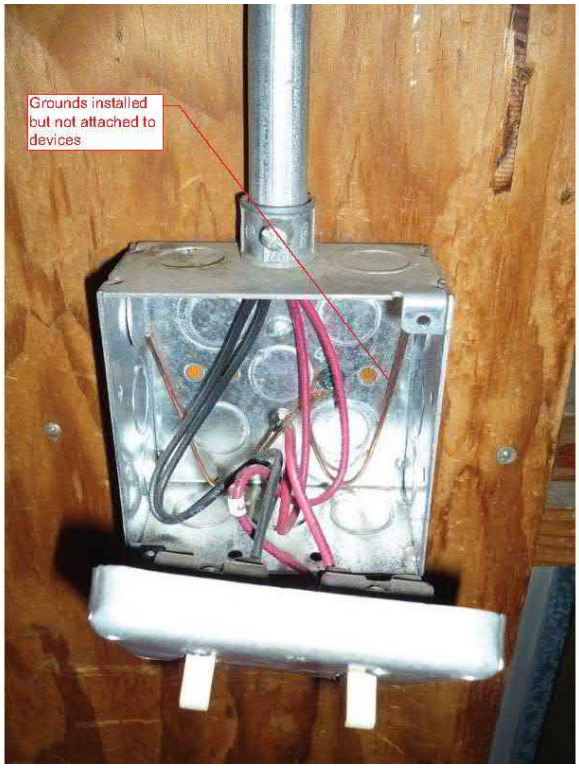
2013 INSPECTION

Truckee Tahoe Airport District

Warehouse


Receptacles are not bonded to equipment ground


Working space about electrical equipment not maintained


Grounds installed but not attached to devices

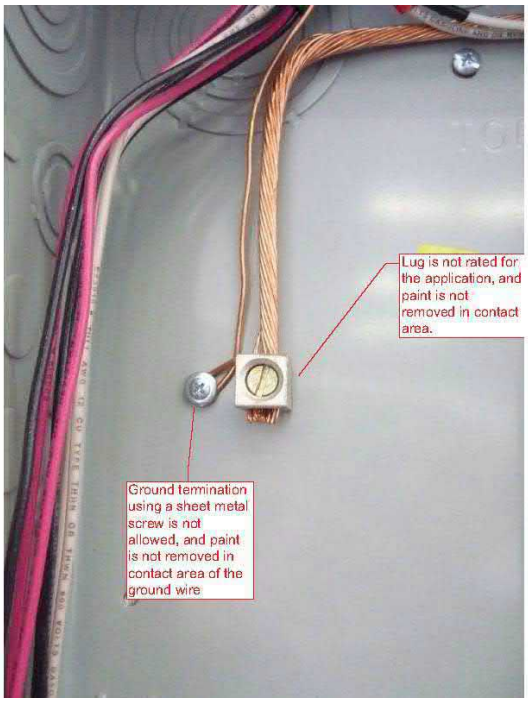

Disconnect required for motor and controller

Warehouse

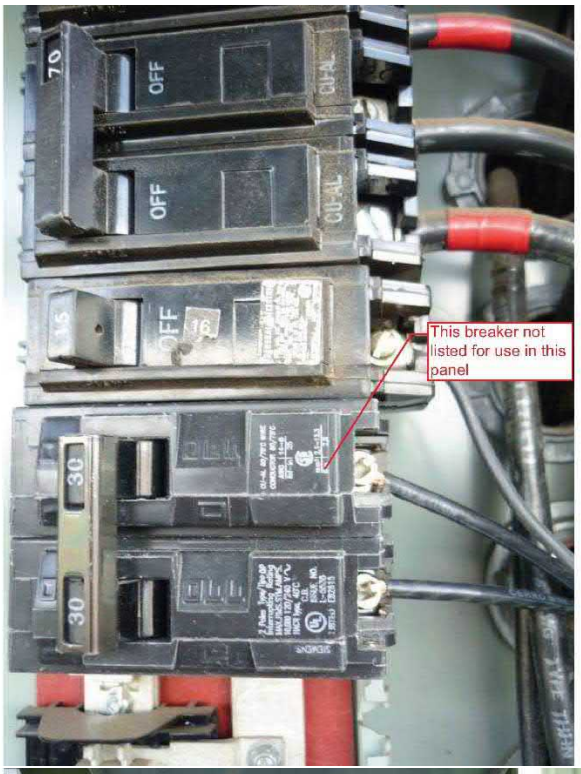
2013 INSPECTION

Truckee Tahoe Airport District

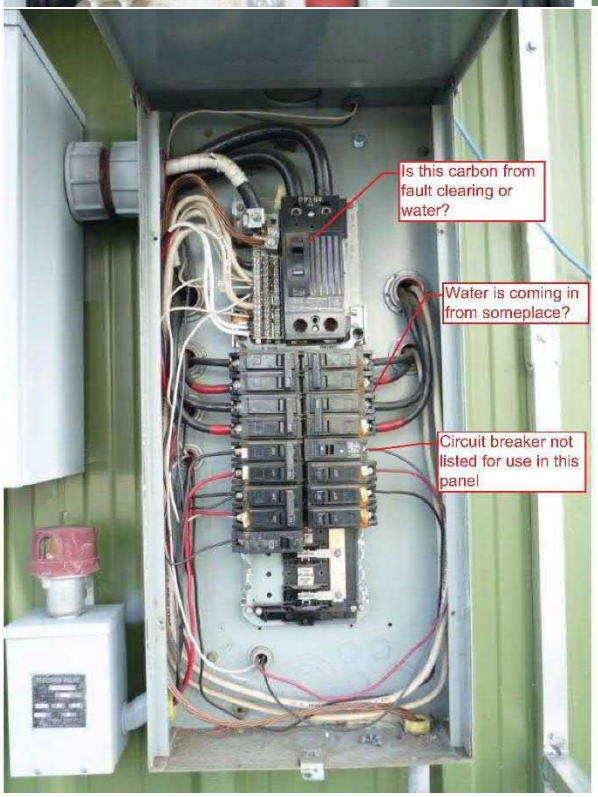
Warehouse

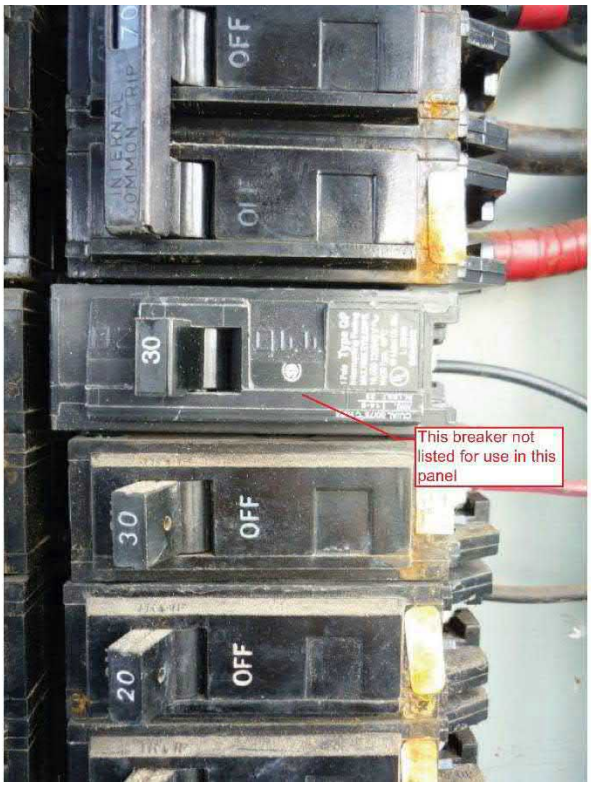

Lug is not rated for the application, and paint is not removed in contact area.
Ground termination using a sheet metal screw is not allowed, and paint is not removed in contact area of the ground wire

Hangar A



Now replaced with LED fixtures

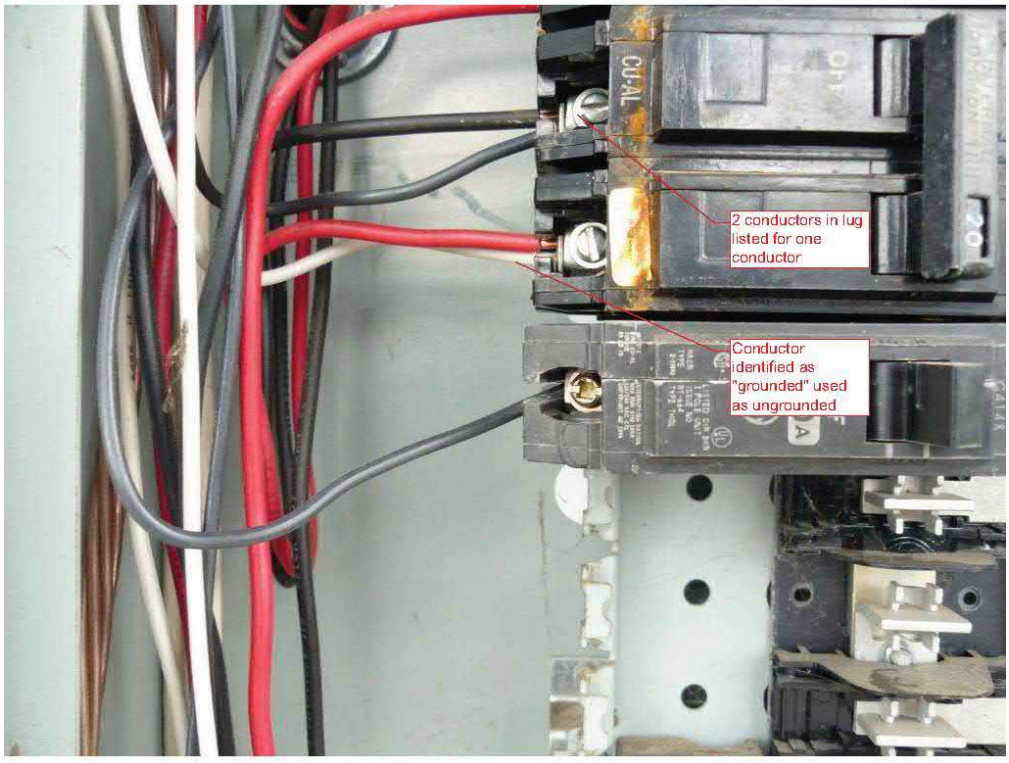




2013 INSPECTION

Truckee Tahoe Airport District

Hangar B



2013 INSPECTION

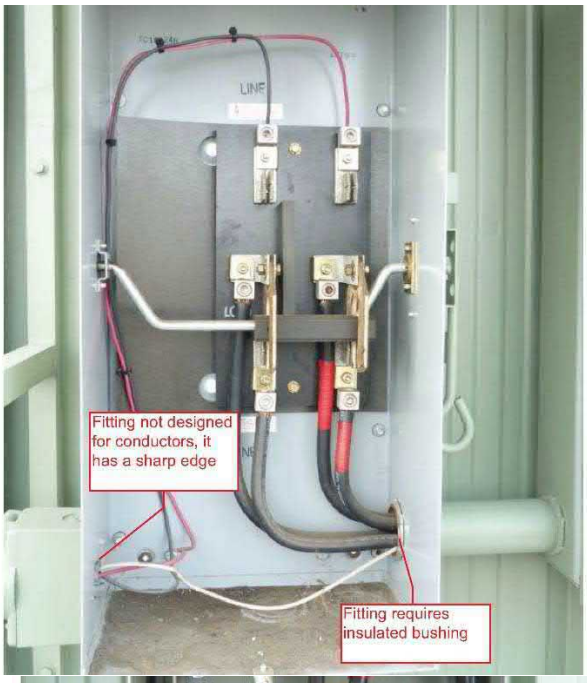
Truckee Tahoe Airport District

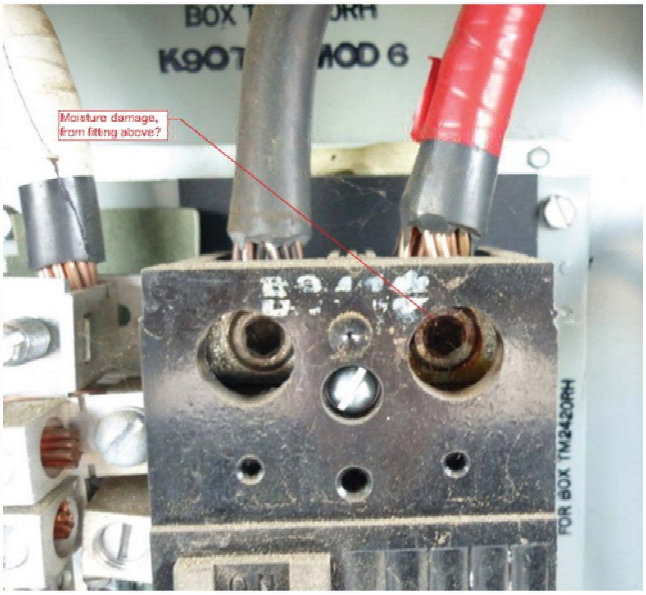
Hangar C

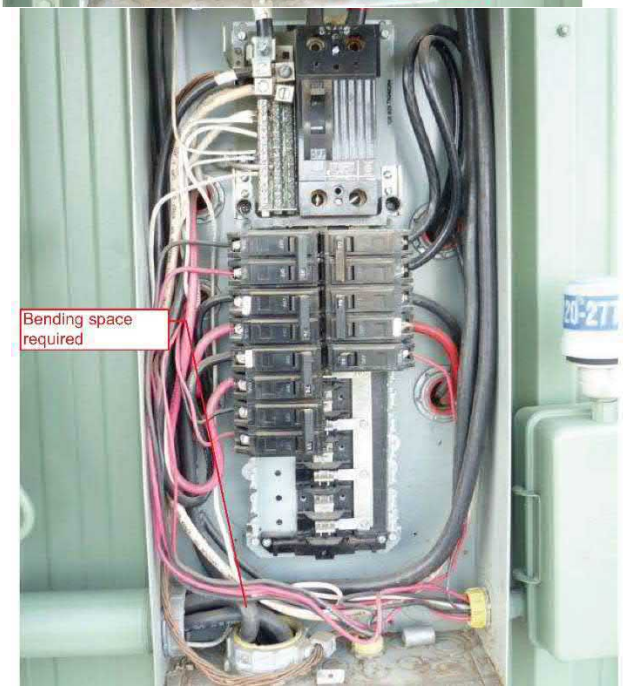
2013 INSPECTION

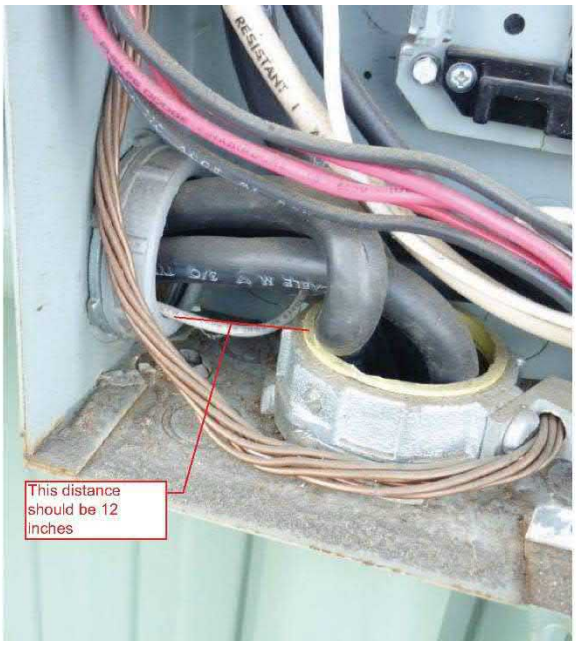
Truckee Tahoe Airport District

Hangar D





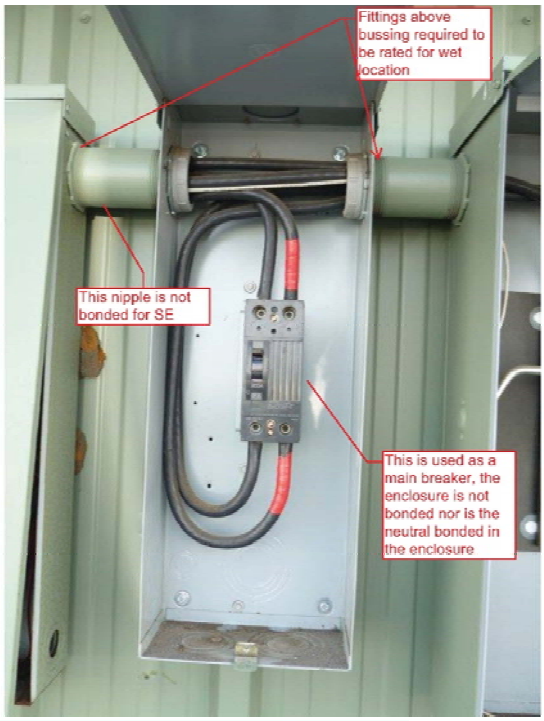


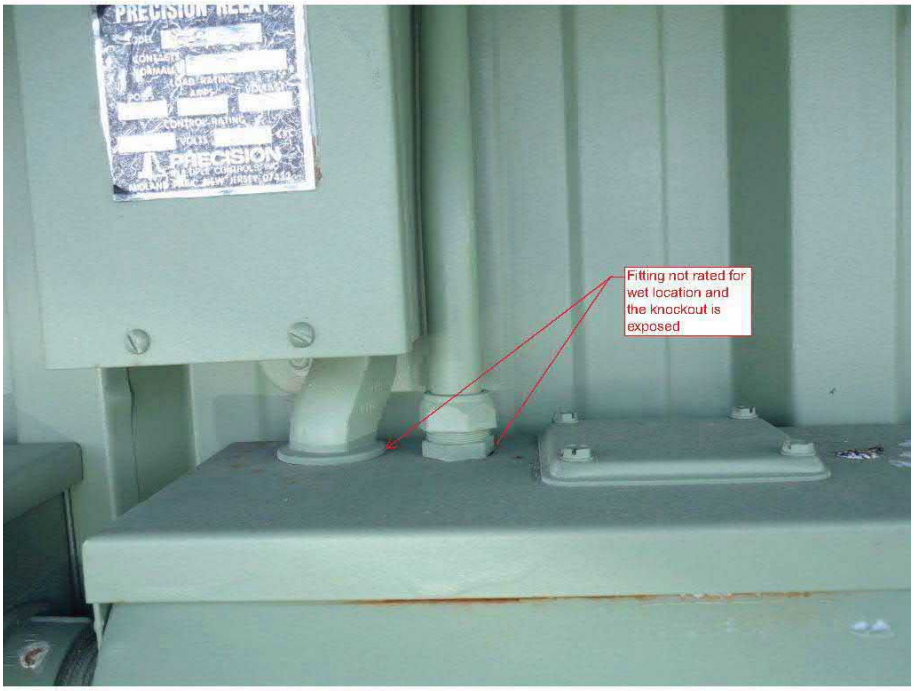


2013 INSPECTION

Truckee Tahoe Airport District

Hangar E

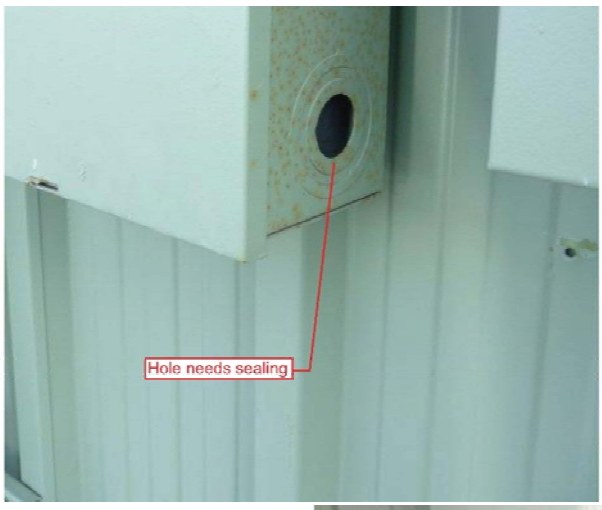


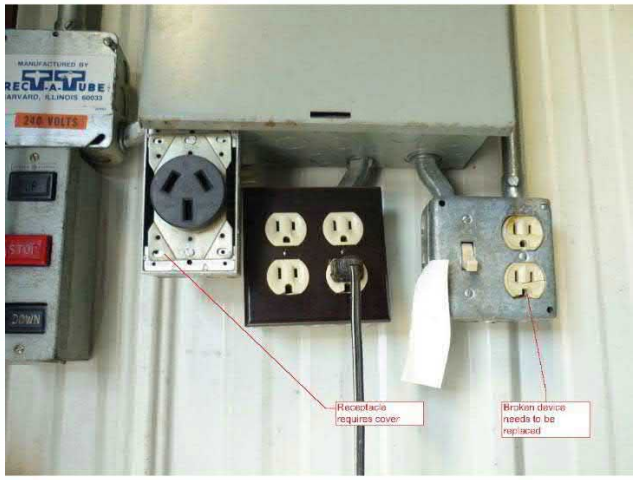


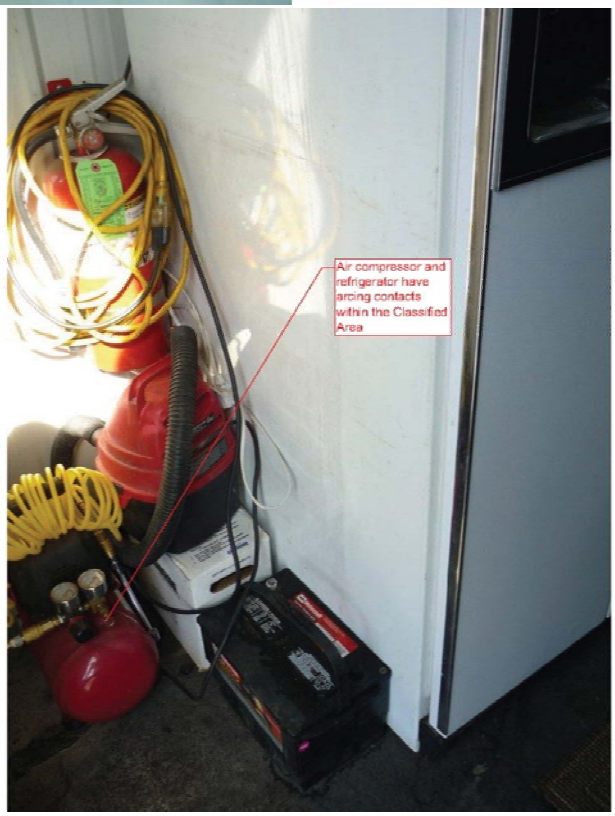
2013 INSPECTION

Truckee Tahoe Airport District

Hangar E



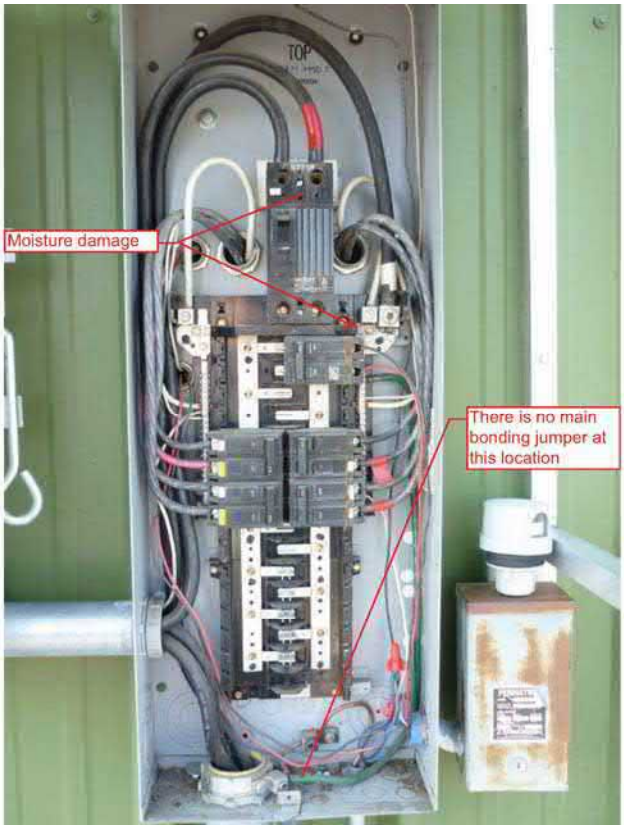




2013 INSPECTION

Truckee Tahoe Airport District

Hangar F



2013 INSPECTION

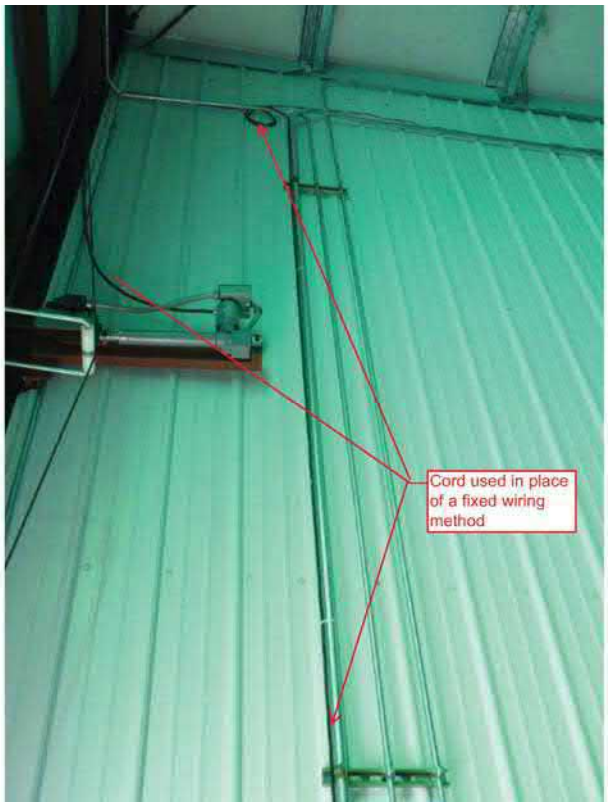
Truckee Tahoe Airport District

Hangar G

2013 INSPECTION

Truckee Tahoe Airport District

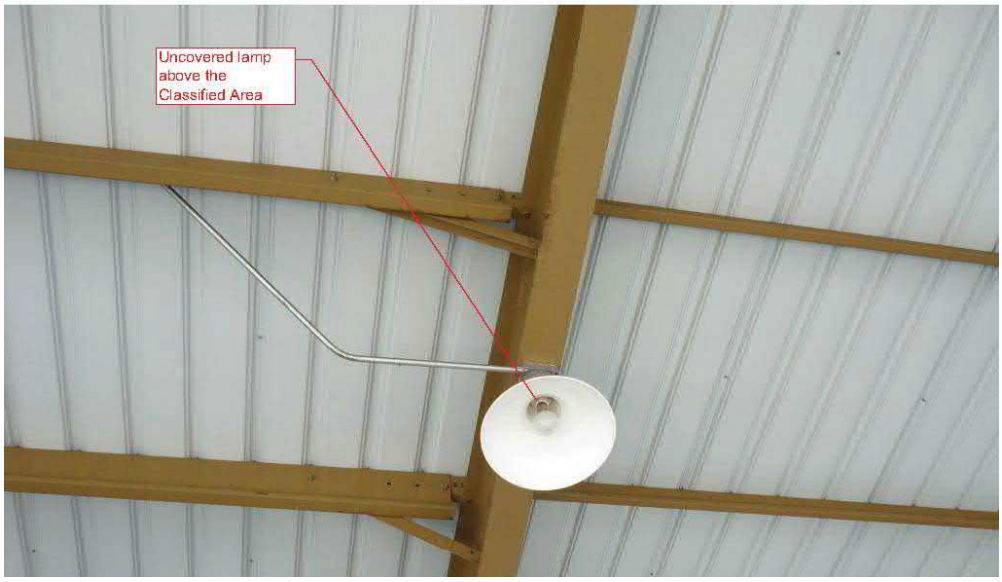
Hangar H

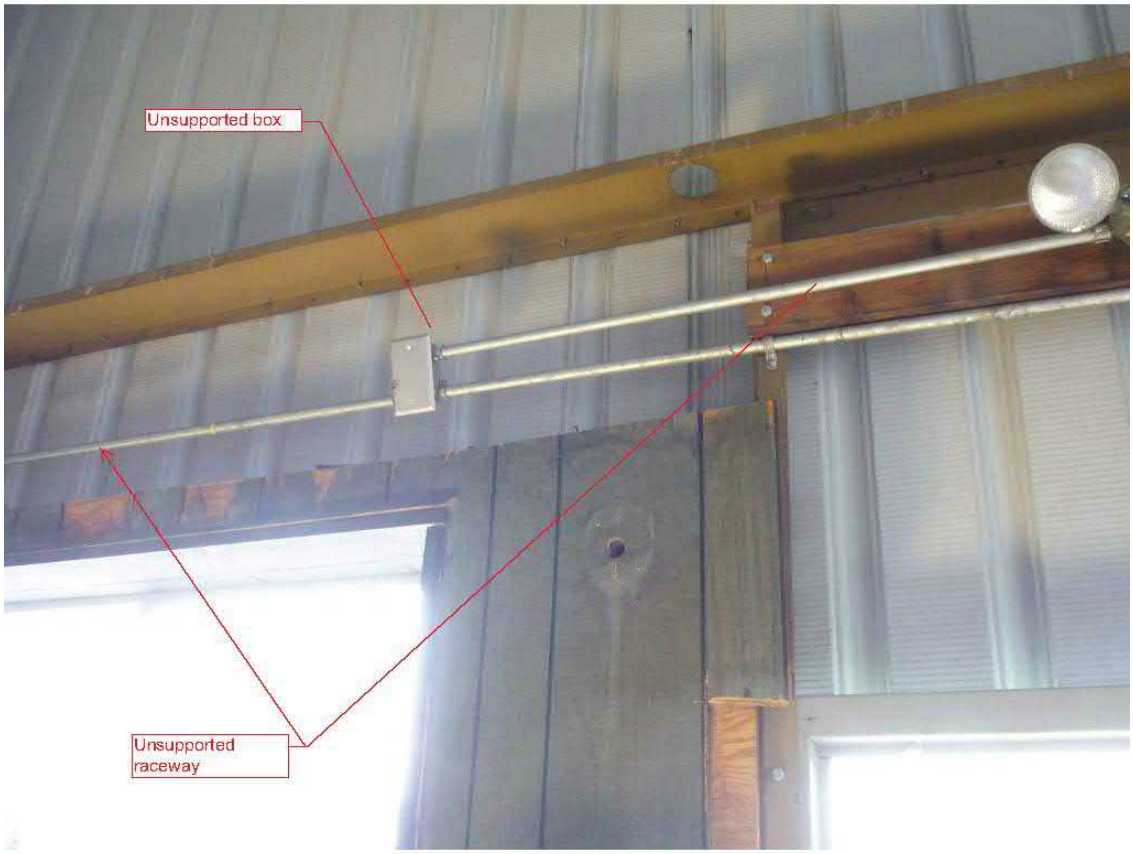


2013 INSPECTION

Truckee Tahoe Airport District

Hangar J

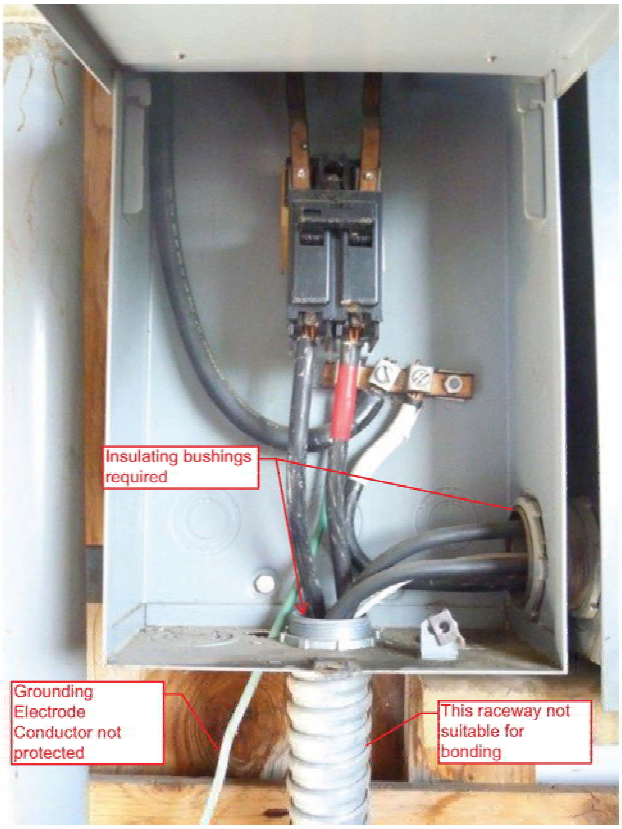




2013 INSPECTION

Truckee Tahoe Airport District

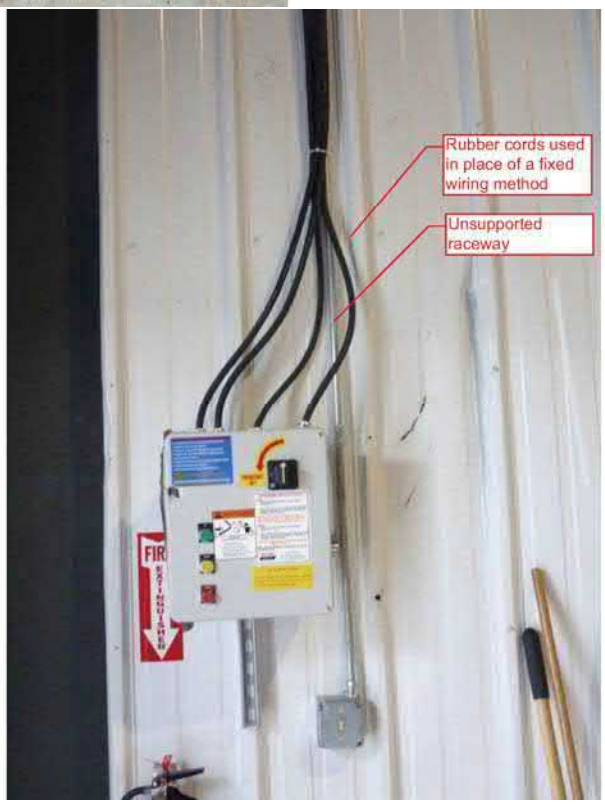
Hangar K



2013 INSPECTION

Truckee Tahoe Airport District

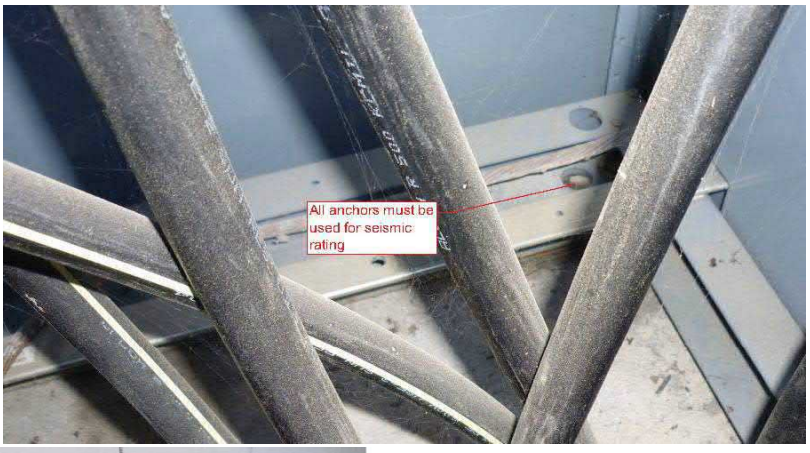
Hangar L

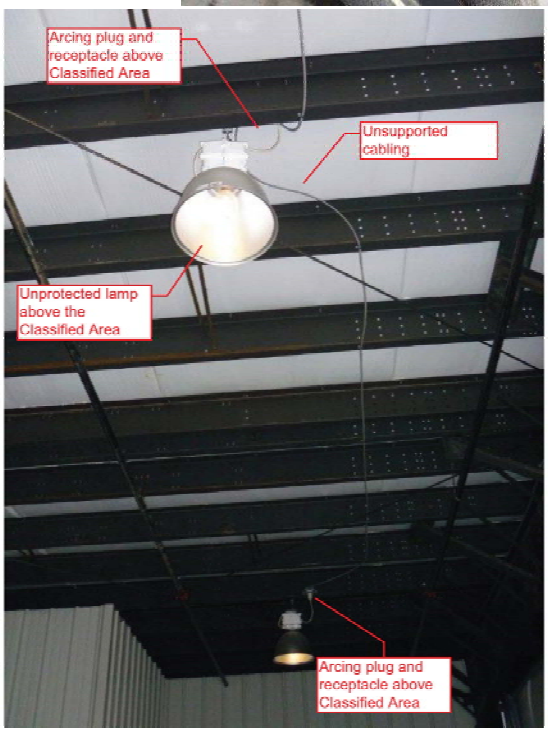


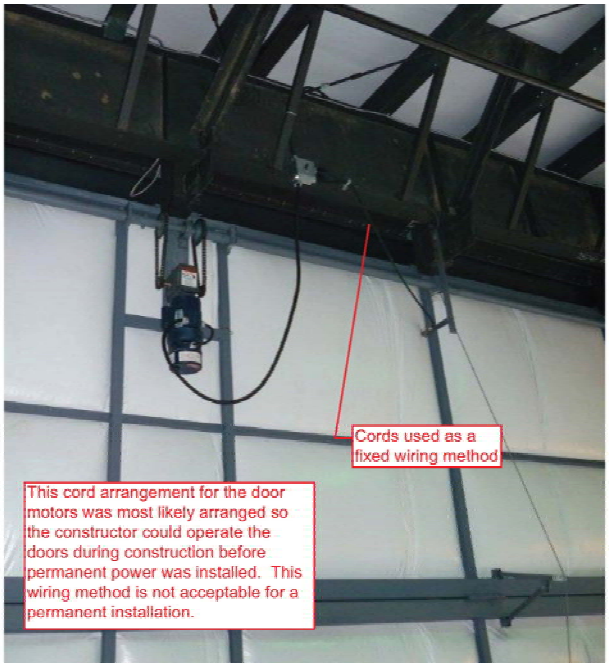
2013 INSPECTION

Truckee Tahoe Airport District

Hangar M



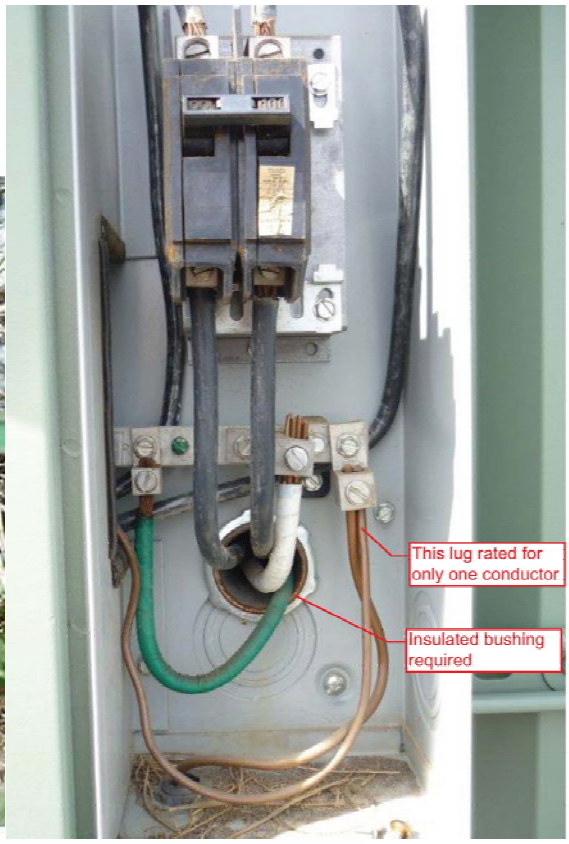




2013 INSPECTION

Truckee Tahoe Airport District

Phoenix Building



2013 INSPECTION

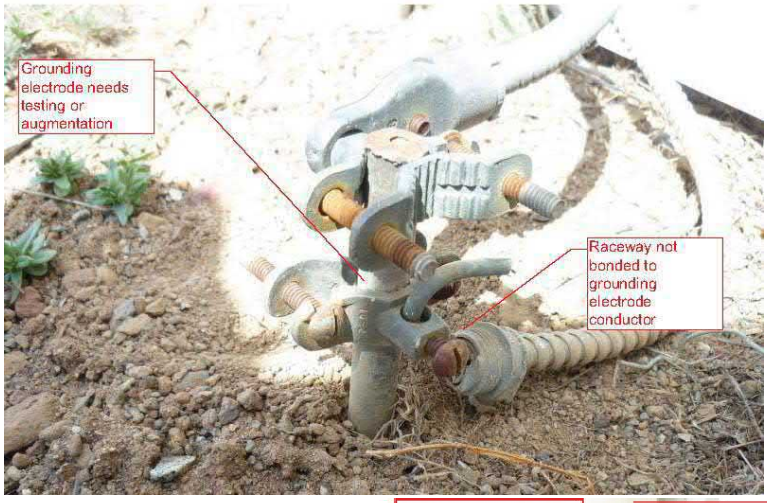
Truckee Tahoe Airport District

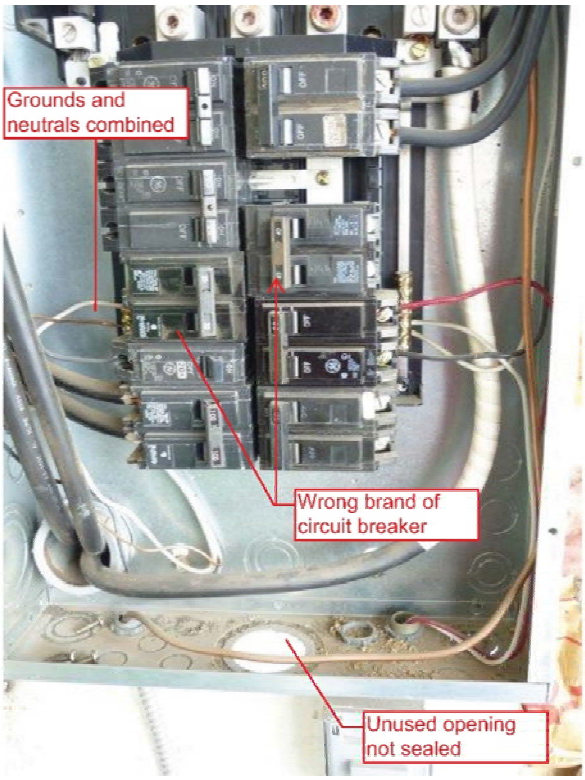
Phoenix Building

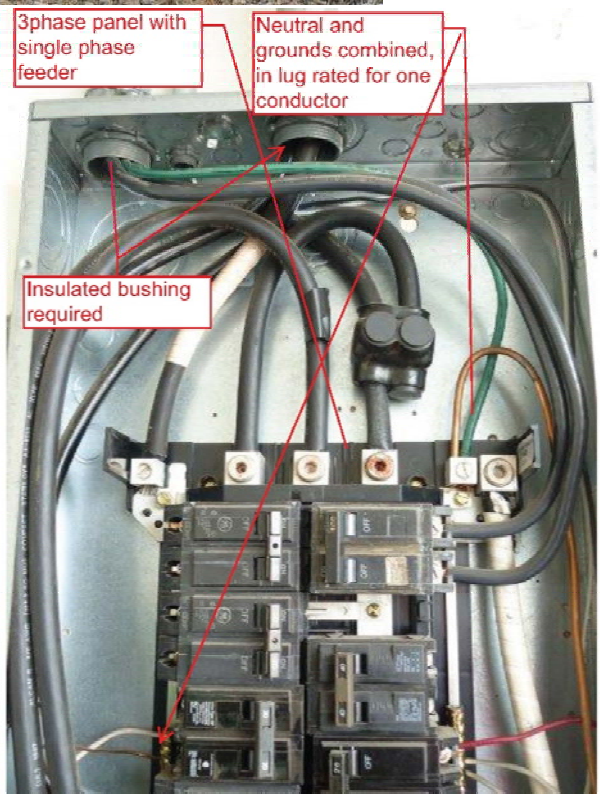
2013 INSPECTION

Truckee Tahoe Airport District

EAA



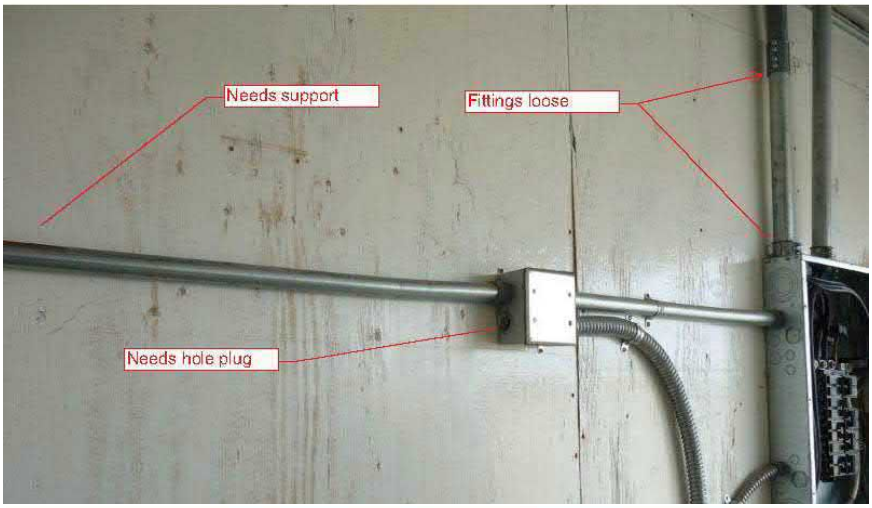




2013 INSPECTION

Truckee Tahoe Airport District

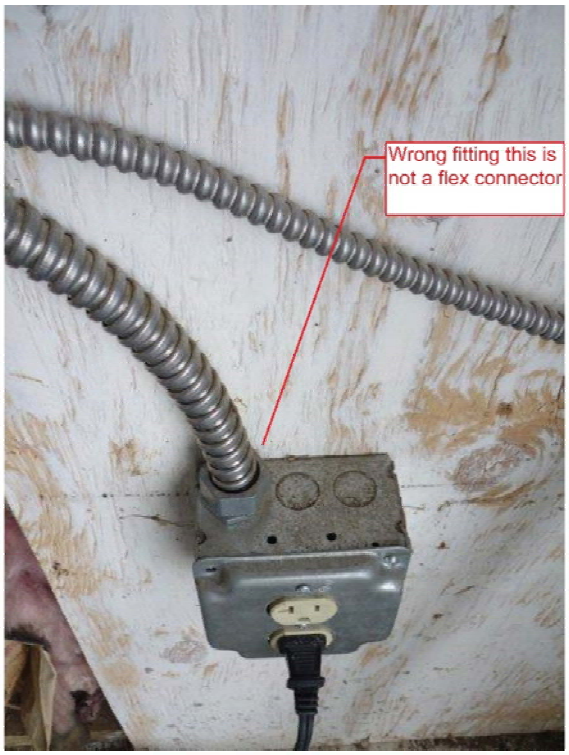
EAA

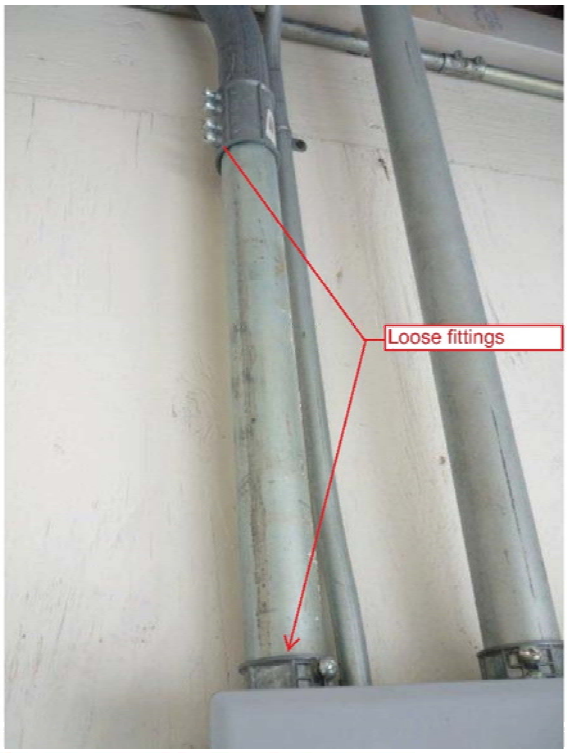


2013 INSPECTION

Truckee Tahoe Airport District

EAA





2013 INSPECTION

Truckee Tahoe Airport District

Car Rental Building

2013 INSPECTION

Truckee Tahoe Airport District

Appendix E

Towers Assessment

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Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

district Owning/Using/Maintaining Tower: Truckee Airport

Tower Model: Unknown

	OK? (Y/N/NA)	Deficiencies Found	Preventive Maintenance Performed	Photo number, Located in index
1. Structure Condition				
1.1 Check for damaged members (legs and bracing)	Y			
1.2 Check for loose members	Y			
1.3 Check for missing members	Y			
1.4 Check for climbing facilities, platforms, catwalks – all secure and functional	Y			
1.5 Check for loose, damaged, corroded and/or missing bolts and/or nut locking devices. Tighten or replace as needed.	Y	.		
1.6 Check for visible cracks in welded connections	Y			
2. Finish				
2.1 Check overall paint and/or galvanizing condition	Y	Minor paint Chipping throughout tower. Galvanization exposed.	Monitor annually for any corrosion or additional flaking.	Airport photo file.
2.2 Check for overall rust and/or corrosion condition including mounts and accessories	Y			
2.3 Check FAA color marking conditions. Rate condition on scale of 1 to 10 in place of Y/N/NA response, where 10 = best case condition, 5 = fair condition and 1 = worst case condition.	Y(9)	Overall paint condition looks good.	Monitor annually for any corrosion or additional flaking.	Airport photo file.
2.4 Check for water collection in members and remedy (e.g., unplug drain holes, etc.)	Y	Diagonal bracing holding the platform in place create a pooling collection point where bracing connects to tower.	Monitor annually for any corrosion.	Image 5156-5157
3. Lighting				
3.1 Check conduit, junction boxes, and fasteners (weather tight and secure)	Y			
3.2 Check drain and vent openings (verify they are unobstructed and clear as needed)	N/A			
3.3 Check wiring condition	Y			
3.4 Check light lenses	Y			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

3.5 Check bulb condition	Y			
3.6 Check controllers (verify they are functioning)	N/A			
3.6.1 Check flasher	N/A			
3.6.2 Check photo control	N/A			
3.6.3 Check alarms if available	N/A			
4. Grounding				
4.1 Check connections	Y	Grounding not to Motorola R-56 standards, but the tower does not hold communications equipment.	If tower is used to facilitate antennas in the future then upgrades recommended.	Image 5139
4.2 Check for corrosion	Y			
4.3 Check lightning protection (secured to structure)	N/A			
4.4 Check ground integrity and verify attachment to tower base.	Y	See 4.1		
4.5 Check grounding of guy points.	N/A			
5. Antennas and Feed Lines				
5.1 Check antenna condition	N/A			
5.2 Check mount and/or ice shield condition (bent, loose, and/or missing members)	N/A			
5.3 Check feed line condition (flanges, seals, dents, jacket damage, grounding, etc.)	N/A			
5.4 Check hanger condition (snap-ins, bolt on, Kellum grips, etc.)	N/A			
5.5 Verify they are properly secured to structure	N/A			
5.6 Check for proper feed line drip loop on all cables.	N/A			
6. Other Appurtenances (walkways, platforms, sensors, floodlights, etc.)				
6.1 Check condition	Y			
6.2 Verify they are properly secured to structure	Y			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

7. Check Insulator Condition				
7.1 Check for cracking and chipping	N/A			
7.2 Check for cleanliness of insulators	N/A			
7.3 Verify spark gaps are set properly	N/A			
7.4 Check isolation transformer condition	N/A			
7.5 Verify bolts and connection are secure	N/A			
8. Guys				
8.1 Check strand condition (corrosion, breaks, nicks, kinks, etc.)	N/A			
8.2 Check guy hardware Conditions	N/A			
8.2.1 Check turnbuckles or equivalent (secure and safety properly applied)	N/A			
8.2.2 Verify cable thimbles are properly in place (if required)	N/A			
8.2.3 Verify service sleeves are properly in place (if required)	N/A			
8.2.4 Check cable connectors (end fittings)	N/A			
8.2.4.1 Verify cable clamps are applied properly and bolts are tight	N/A			
8.2.4.2 Verify wire serving is properly applied	N/A			
8.2.4.3 Verify there are no signs of slippage or damaged strands	N/A			
8.2.4.4 Check preformed wraps – properly applied, fully wrapped, and sleeve in place	N/A			
8.2.4.5 Verify poured sockets are secure and showing no separation	N/A			
8.2.4.6 Verify shackles, bolts, pins and cotter pins are secure and in good condition	N/A			
8.3 Measure guy tensions. Record in worksheet Record of Guy Wire Tension, included as a separate tab in this file.	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

9. Concrete Foundations				
9.1 Ground condition	Y	Foundation is covered over with asphalt.		
9.1.1 Check for settlement, movement or earth cracks	N/A			
9.1.2 Check for erosion	N/A			
9.1.3 Assess site condition (standing water, drainage, trees, etc.)	Y	Cracks in the asphalt.	Monitor for additional cracking annually.	Photos 5136-5137
9.2 Anchorage condition	N/A			
9.2.1 Check nuts and/or nut locking device for tightness and acceptable condition	Y			
9.2.2 Check grout condition	N/A			
9.2.3 Check anchorages and/or anchor rod condition	N/A			
9.3 Check concrete condition	N/A			
9.3.1 Check for cracking, spalling, or splitting	N/A			
9.3.2 Check for chipped or broken concrete	N/A			
9.3.3 Check for honeycombing	N/A			
9.3.4 Check for low spots to collect moisture	N/A			
10. Guyed Mast Anchors				
10.1 Check for settlement, movement or earth cracks	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

10.2 Check for backfill heaped over concrete for water shedding	N/A			
10.3 Check for anchor rod condition below earth (Maintain required structural capacity of anchor during exploration. Attachment to temporary anchorage may be required)	N/A			
10.4 Check corrosion control measures (galvanizing, coating, concrete encasement, cathodic protection systems, etc.)	N/A			
10.5 Check for anchor heads clear of earth	N/A			
11. Tower Alignment				
11.1 Check tower plumb and twist. Generate report with findings and include with consolidated report.	Y			
12. Compound Area				
12.1 Check condition of access road and parking area.	Y			
12.2 Check condition of fences and gate(s)	N/A			
12.3 Check compound for excessive underbrush growth, obstructions, debris, etc.	Y	Wide open in airport parking lot.		
12.4 Check electrical entrance.	Y			
12.5 Check general site conditions.	Y			
13. Building				
13.1 Check condition of building. (Optional)	N/A			
13.2 Check roof of building for damage or deterioration. (Optional)	N/A			
13.3 Check security light. (Optional)	N/A			
14. Signage				
14.1 Check for Radiation and ASR signage and notate in additional comments and photograph.	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Airport Tower

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.31896 -120.14512

Tower Manufacturer: Unknown

Additional Comments. Attach additional sheets as needed. Number of additional sheets attached: _____

Tower appears in over all good condition with zero corrosion visible. It has minor paint chipping throughout tower. Tower is not currently used to facilitate any communications equipment. Continue to monitor the minor issues noted.

Attachments included with this document? Site photos.

If Yes, number of pages included as attachments:

The signature on this document will certify that the inspection and maintenance of this tower has been completed.

Contractor's Inspector Signature: Ryan J Hall

ACE-IT Record of Radio Tower Guy Tension Readings

Date(s) of Inspection:

Inspector Company:

Site Name/Location:

Inspector Name:

District Owning/Using/Maintaining Tower:

Notice - Guy wire tensions should not be modified without prior ACE-IT approval.

Method Used (Describe equipment and method used):

Temperature - _____ Deg. F.

Wind Velocity - _____ MPH

Wind Direction - _____

Guy Level	Cable Size	Vertical Height (Elev.)	Horizontal Distance to Anchor	Required Tension	Tension as Checked	Corrected Tension (See Notice Above Before Proceeding)
1						
2						
3						
4						
5						
6						
7						
8						

Comments / Issues Needing Attention

ACE-IT Record of Radio Tower Location/ Directions

Provide directions to tower site location from major road location. Step by Step directions. Additional directions by maps can be used.

Start Point Location

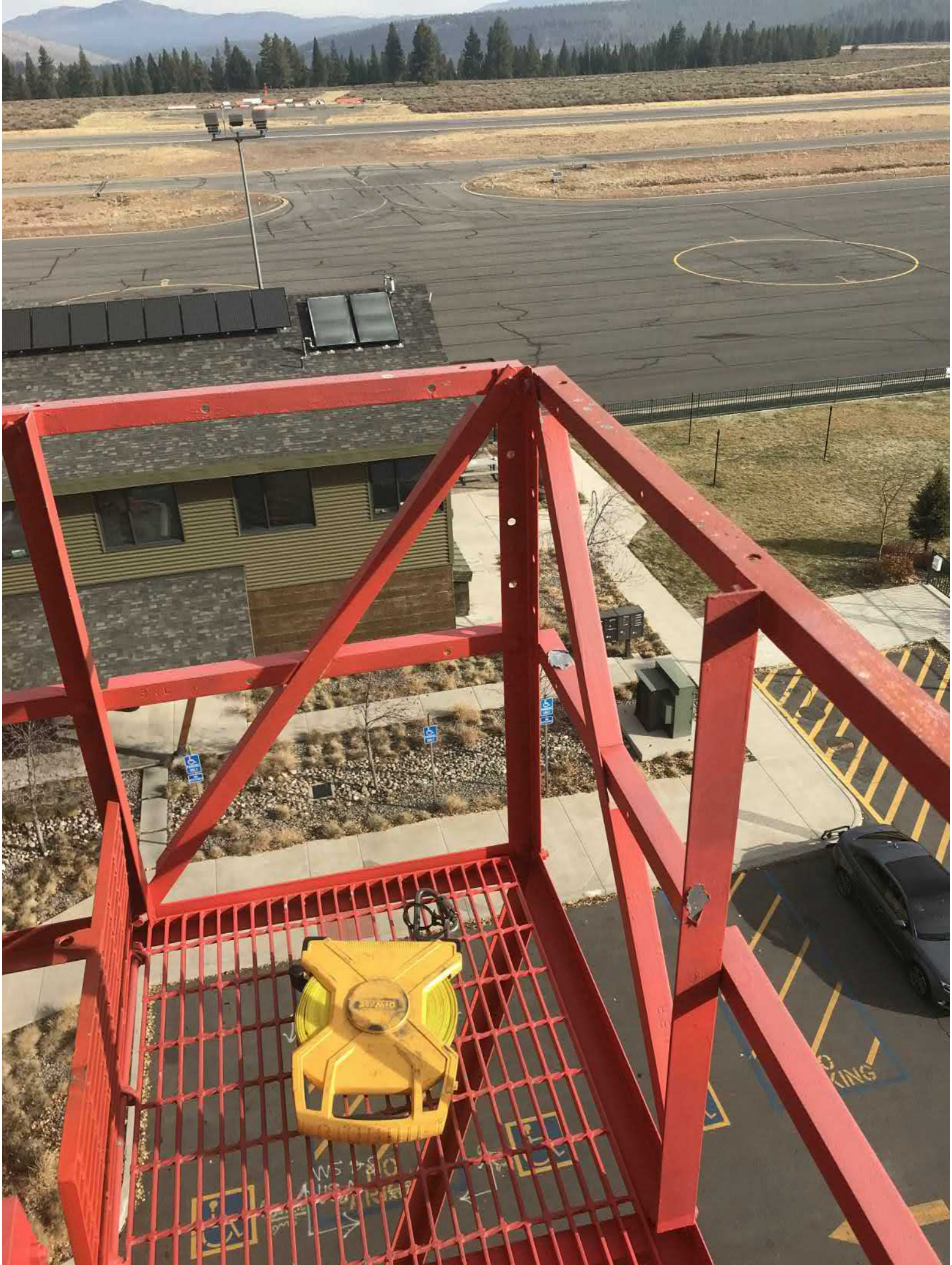

STOP


Truckee Family Club
NOTICE
EMPLOYEES
ONLY

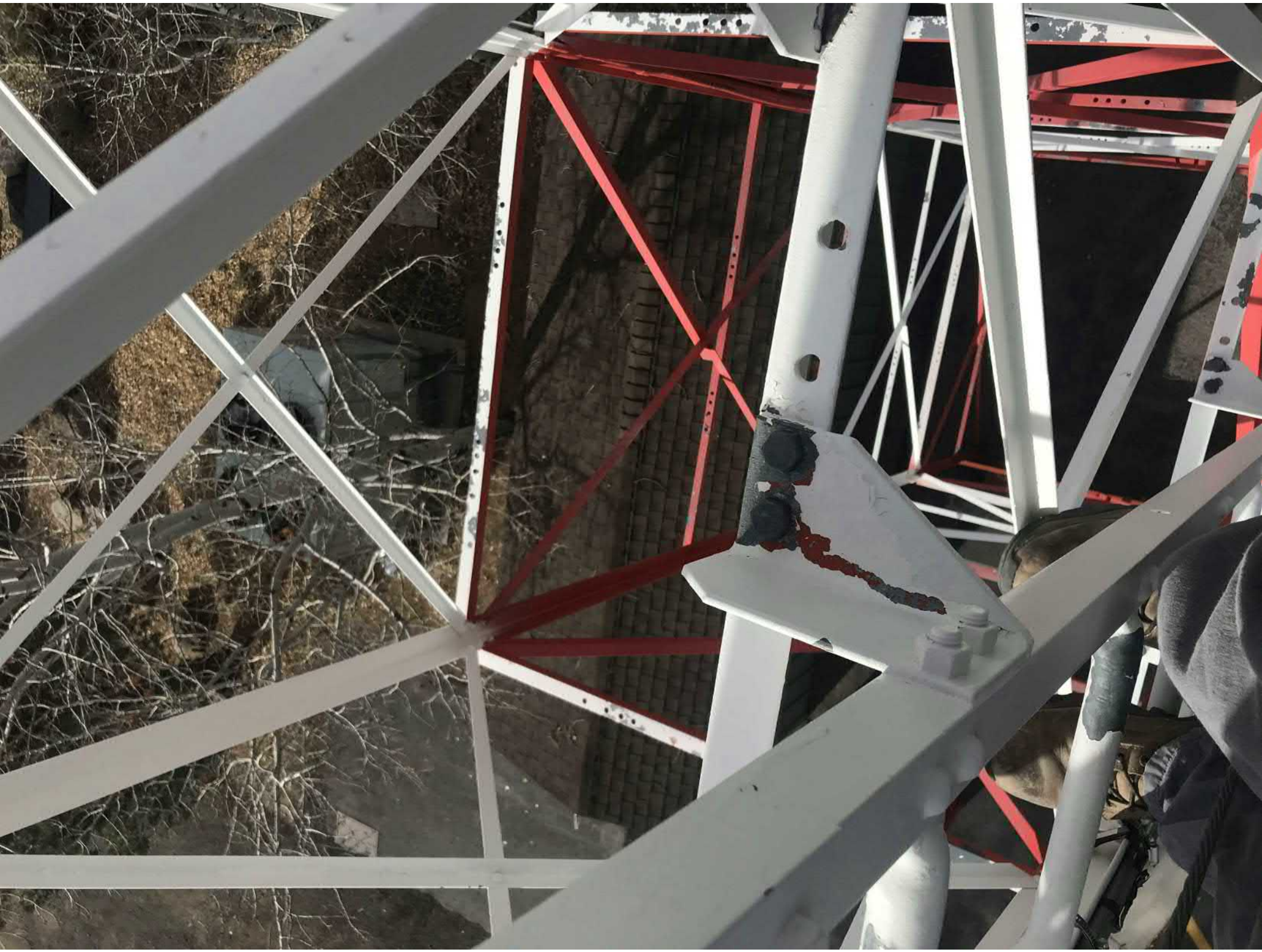

3
4
5
6
11
10
6


3
4
5
6
11
10
6


STOP



STOP




10G

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

District Owning/Using/Maintaining Tower: Truckee Airport

Tower Model: Unknown

	OK? (Y/N/NA)	Deficiencies Found	Preventive Maintenance Performed	Photo number, Located in index
1. Structure Condition				
1.1 Check for damaged members (legs and bracing)	Y	At 10' the horizontal bracing is sagging due to the weight of the equipment mounted on the tower.	Monitor annually for additional movement on future site visits	Photos-5217-5218-5219
1.2 Check for loose members	Y			
1.3 Check for missing members	Y			
1.4 Check for climbing facilities, platforms, catwalks – all secure and functional	Y	There is not a cable climb on this tower. Platforms are made of wood that are loose and weak.	Recommend adding a cable safety climb. Replace platforms.	Photos- 5167-5192 5190-5197-5198
1.5 Check for loose, damaged, corroded and/or missing bolts and/or nut locking devices. Tighten or replace as needed.	Y	.		
1.6 Check for visible cracks in welded connections	Y			
2. Finish				
2.1 Check overall paint and/or galvanizing condition	Y			
2.2 Check for overall rust and/or corrosion condition including mounts and accessories	Y			
2.3 Check FAA color marking conditions. Rate condition on scale of 1 to 10 in place of Y/N/NA response, where 10 = best case condition, 5 = fair condition and 1 = worst case condition.	Y-2	Tower paint has faded and chipped away in many areas throughout the tower down to the galvanization layer. I did not see any corrosion or exposure to the underlying areas.	Monitor annually for any corrosion.	Photo Index
2.4 Check for water collection in members and remedy (e.g., unplug drain holes, etc.)	Y			
3. Lighting				
3.1 Check conduit, junction boxes, and fasteners (weather tight and secure)	Y			
3.2 Check drain and vent openings (verify they are unobstructed and clear as needed)	Y			
3.3 Check wiring condition	Y			
3.4 Check light lenses	Y			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

3.5 Check bulb condition	Y			
3.6 Check controllers (verify they are functioning)	Y			
3.6.1 Check flasher	N/A			
3.6.2 Check photo control	N/A			
3.6.3 Check alarms if available	N/A			
4. Grounding				
4.1 Check connections	Y			
4.2 Check for corrosion	Y			
4.3 Check lightning protection (secured to structure)				
4.4 Check ground integrity and verify attachment to tower base.	Y	Tower has minimal grounding at the base. Lightening rod on tower top is not the highest point on tower.	Raise lightening rod to make it the tallest point on tower top.	Photo 5180
4.5 Check grounding of guy points.	N/A			
5. Antennas and Feed Lines				
5.1 Check antenna condition	Y	Most install applications are poorly installed. Some bracing was drilled into weakening the structure support for mount installation.	I recommend having proper install materials replace the make shift ones used. Recommend engineered tower analysis.	Photos-5206-5206-5203-5219-Photo Index
5.2 Check mount and/or ice shield condition (bent, loose, and/or missing members)	Y	Antenna mast on tower top has come loose and dangling over the railing.	Secure to the tower.	Photos-5199-5195
5.3 Check feed line condition (flanges, seals, dents, jacket damage, grounding, etc.)	Y			
5.4 Check hanger condition (snap-ins, bolt on, Kellum grips, etc.)	N	Only a few antenna systems on the tower have adequate hanger materials securing them to the tower.	Remove cable ties and add proper hanger materials.	Photos-5208-5201-5170 and photo index.
5.5 Verify they are properly secured to structure	N			
5.6 Check for proper feed line drip loop on all cables.	N			
6. Other Appurtenances (walkways, platforms, sensors, floodlights, etc.)				
6.1 Check condition	Y	See note 1.4		

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

6.2 Verify they are properly secured to structure	Y	See note 1.4		
7. Check Insulator Condition				
7.1 Check for cracking and chipping	N/A			
7.2 Check for cleanliness of insulators	N/A			
7.3 Verify spark gaps are set properly	N/A			
7.4 Check isolation transformer condition	N/A			
7.5 Verify bolts and connection are secure	N/A			
8. Guys				
8.1 Check strand condition (corrosion, breaks, nicks, kinks, etc.)	N/A			
8.2 Check guy hardware Conditions	N/A			
8.2.1 Check turnbuckles or equivalent (secure and safety properly applied)	N/A			
8.2.2 Verify cable thimbles are properly in place (if required)	N/A			
8.2.3 Verify service sleeves are properly in place (if required)	N/A			
8.2.4 Check cable connectors (end fittings)	N/A			
8.2.4.1 Verify cable clamps are applied properly and bolts are tight	N/A			
8.2.4.2 Verify wire serving is properly applied	N/A			
8.2.4.3 Verify there are no signs of slippage or damaged strands	N/A			
8.2.4.4 Check preformed wraps – properly applied, fully wrapped, and sleeve in place	N/A			
8.2.4.5 Verify poured sockets are secure and showing no separation	N/A			
8.2.4.6 Verify shackles, bolts, pins and cotter pins are secure and in good condition	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

8.3 Measure guy tensions. Record in worksheet Record of Guy Wire Tension, included as a separate tab in this file.	N/A			
9. Concrete Foundations				
9.1 Ground condition	N/A	Foundation completely covered with back fill and ground materials.		Photos-5169-5171-5221
9.1.1 Check for settlement, movement or earth cracks	N/A			
9.1.2 Check for erosion	N/A			
9.1.3 Assess site condition (standing water, drainage, trees, etc.)	N/A			
9.2 Anchorage condition	N/A			
9.2.1 Check nuts and/or nut locking device for tightness and acceptable condition	Y			
9.2.2 Check grout condition	N/A			
9.2.3 Check anchorages and/or anchor rod condition	N/A			
9.3 Check concrete condition	N/A			
9.3.1 Check for cracking, spalling, or splitting	N/A			
9.3.2 Check for chipped or broken concrete	N/A			
9.3.3 Check for honeycombing	N/A			
9.3.4 Check for low spots to collect moisture	N/A			
10. Guyed Mast Anchors				
10.1 Check for settlement, movement or earth cracks	N/A			
10.2 Check for backfill heaped over concrete for water shedding	N/A			
10.3 Check for anchor rod condition below earth (Maintain required structural capacity of anchor during exploration. Attachment to temporary anchorage may be required)	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

10.4 Check corrosion control measures (galvanizing, coating, concrete encasement, cathodic protection systems, etc.)	N/A			
10.5 Check for anchor heads clear of earth	N/A			
11. Tower Alignment				
11.1 Check tower plumb and twist. Generate report with findings and include with consolidated report.	Y			
12. Compound Area				
12.1 Check condition of access road and parking area.	Y	Steep hill to the tower site location with large rocks and gravel at the base.		
12.2 Check condition of fences and gate(s)	N/A			
12.3 Check compound for excessive underbrush growth, obstructions, debris, etc.	Y	Small plants and roots cover base of tower.	Clear brush if it starts impeding on tower members.	Photo Index
12.4 Check electrical entrance.	Y			
12.5 Check general site conditions.	Y			
13. Building				
13.1 Check condition of building. (Optional)	N/A	Did not access building.		
13.2 Check roof of building for damage or deterioration. (Optional)	N/A			
13.3 Check security light. (Optional)	N/A			
14. Signage				
14.1 Check for Radiation and ASR signage and notate in additional comments and photograph.	Y	Add warning signs.		

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11-14-19

Inspector Company: Day Wireless

Site Name/Location: Alder Hill

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.35251 -120.19529

Tower Manufacturer: Unknown (International?)

Additional Comments. Attach additional sheets as needed. Number of additional sheets attached: _____

Tower structure is in poor condition. If the tower structure will continue to be used in the matter of which it is now I recommend having an engineering report completed. The structure is not intended to be used in the matter of which it is being used. 85% of the installation on the tower are not to industry standard using correct methods of mount/antenna/cable installations. I recommend removing any unessential equipment from the tower and having it completely cleaned up after having an engineered tower analysis completed. The antenna mast at top of tower should be secured immediately to avoid it falling off of the tower all together.

Attachments included with this document? Site photos.

If Yes, number of pages included as attachments:

The signature on this document will certify that the inspection and maintenance of this tower has been completed.

Contractor's Inspector Signature: Ryan J Hall

ACE-IT Record of Radio Tower Guy Tension Readings

Date(s) of Inspection:

Inspector Company:

Site Name/Location:

Inspector Name:

District Owning/Using/Maintaining Tower:

Notice - Guy wire tensions should not be modified without prior ACE-IT approval.

Method Used (Describe equipment and method used):

Temperature - _____ Deg. F.

Wind Velocity - _____ MPH

Wind Direction - _____

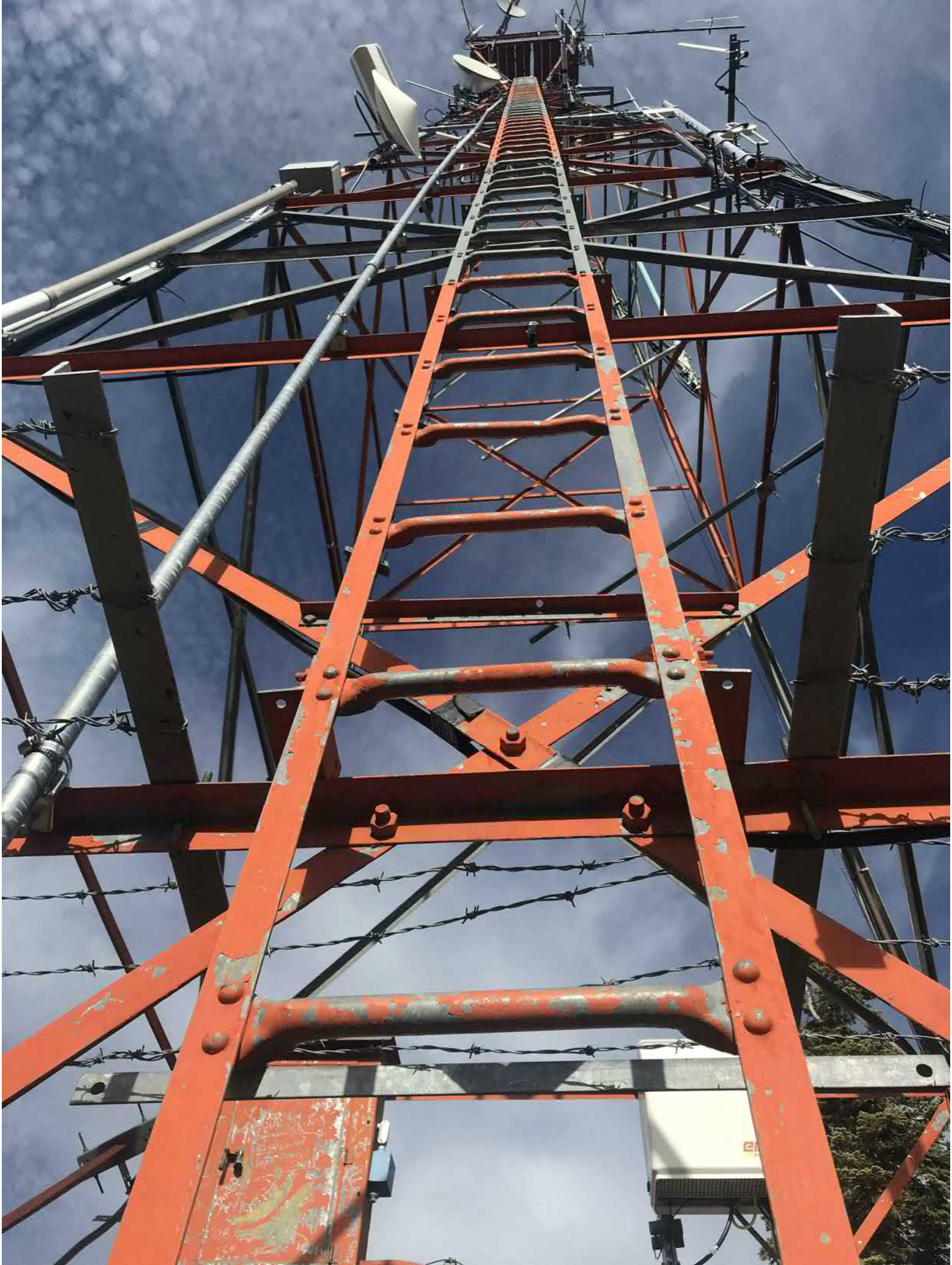
Guy Level	Cable Size	Vertical Height (Elev.)	Horizontal Distance to Anchor	Required Tension	Tension as Checked	Corrected Tension (See Notice Above Before Proceeding)
1						
2						
3						
4						
5						
6						
7						
8						

Comments / Issues Needing Attention

ACE-IT Record of Radio Tower Location/ Directions

Provide directions to tower site location from major road location. Step by Step directions. Additional directions by maps can be used.

Start Point Location

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250 DOLLARS FINE FOR DISTURBING THIS MARK
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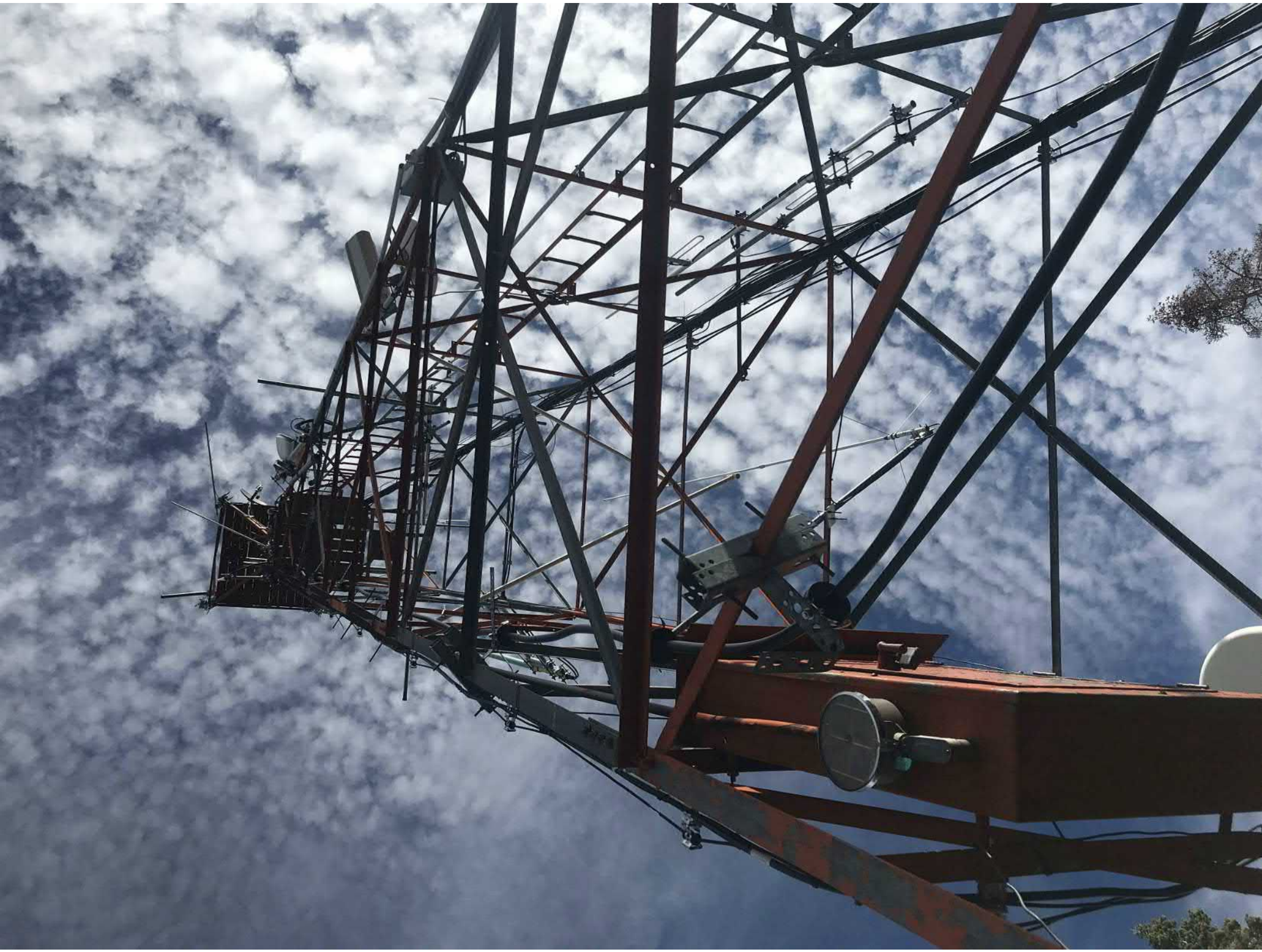


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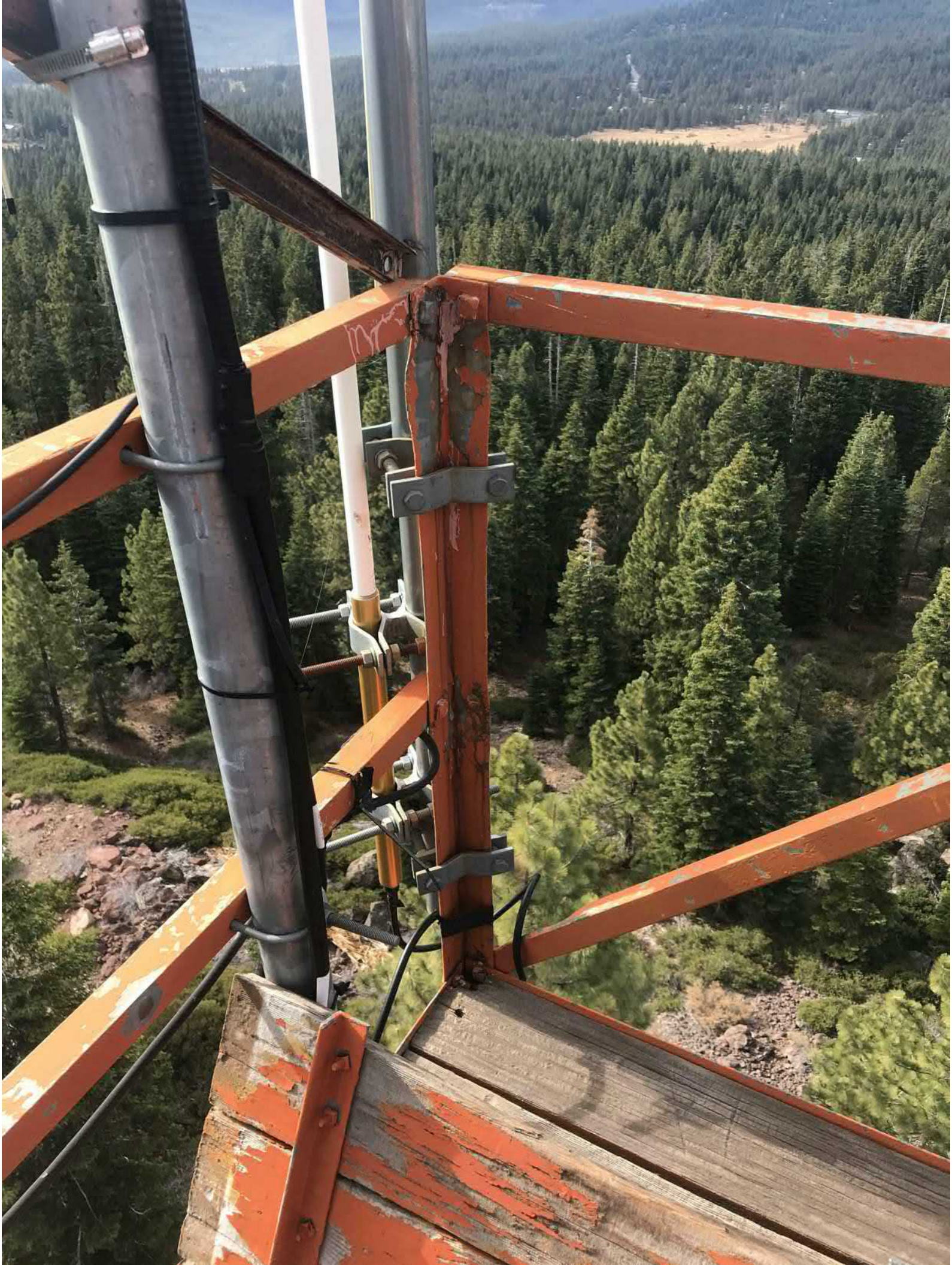
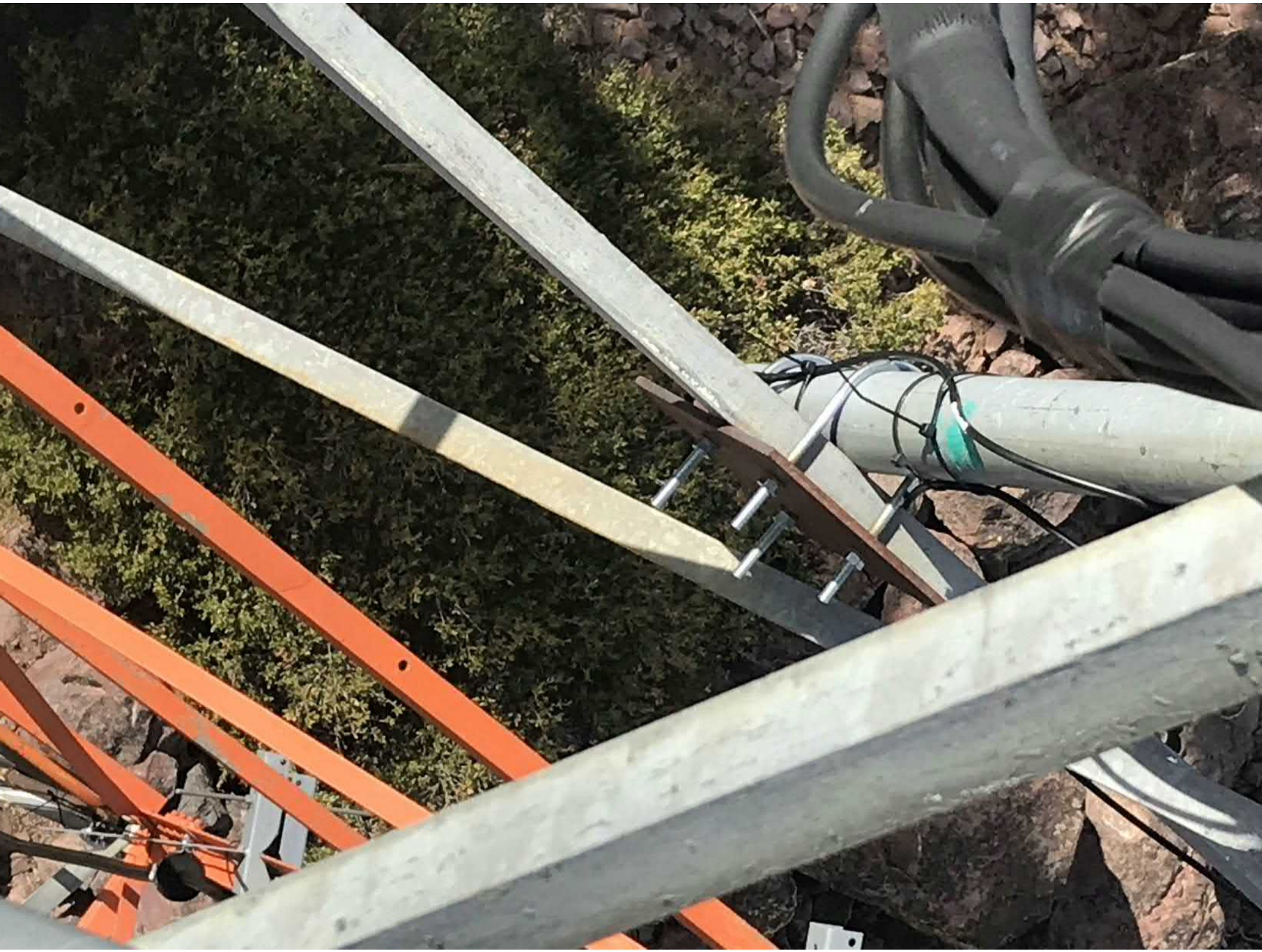
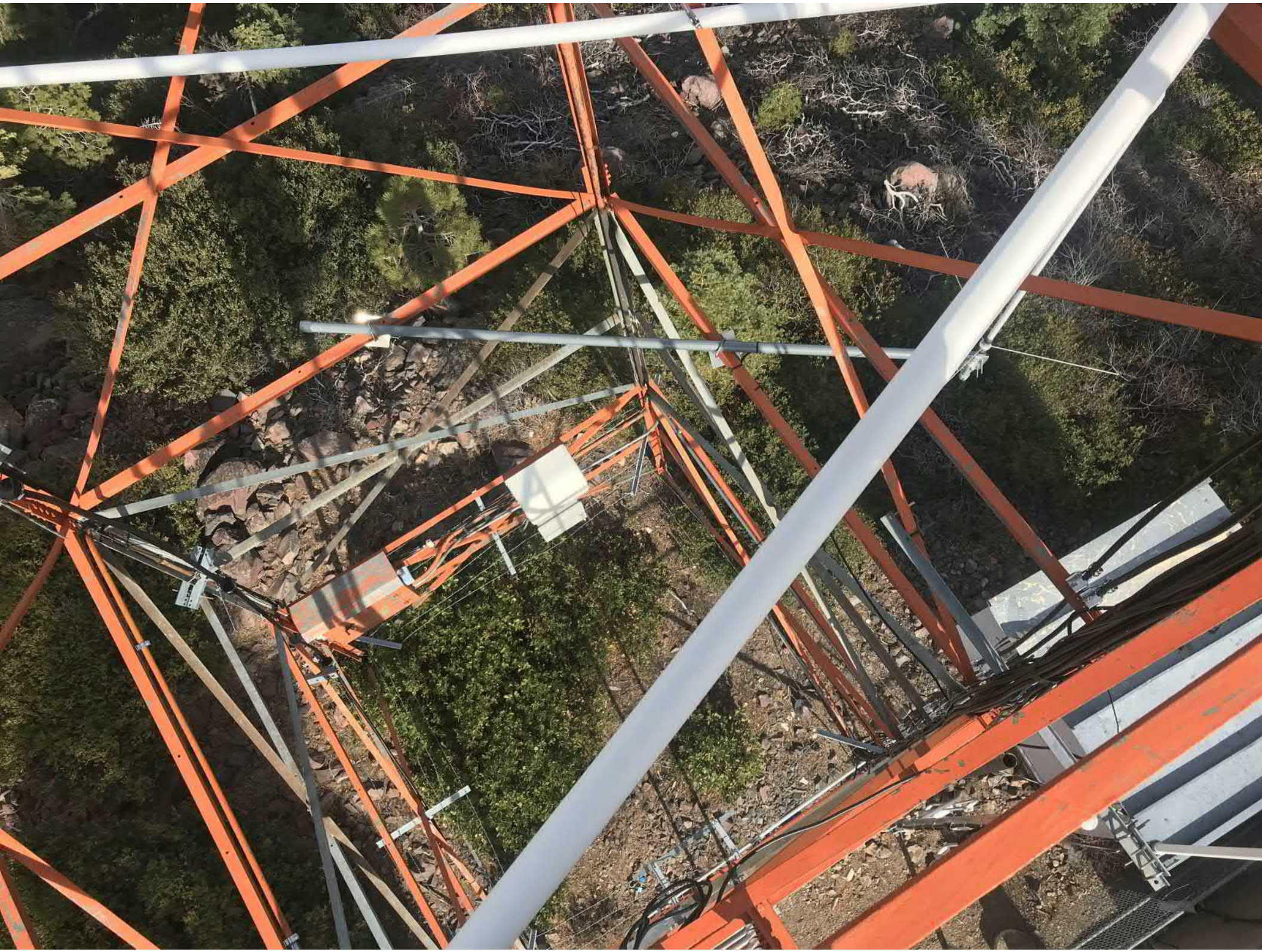
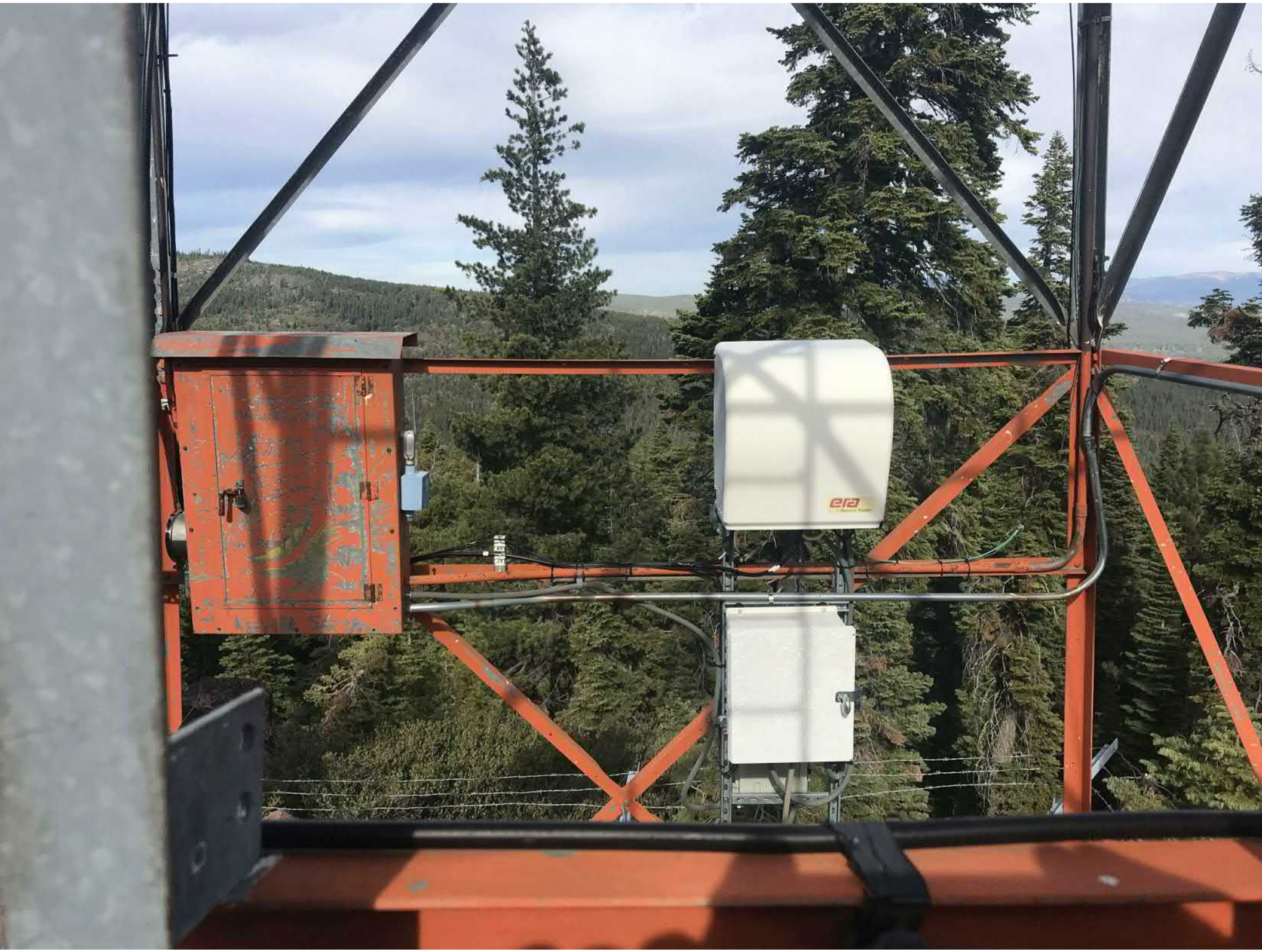


JAKE



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UNAUTHORIZED ENTRY PROHIBITED
IT IS A FEDERAL OFFENCE TO TAMPER WITH AERONAUTICAL AIDS TO NAVIGATION
PERMISSION FOR ACCESS MUST BE OBTAINED FROM THE TRUCKEE TAHOE AIRPORT DISTRICT. CONTACT AIRPORT OPERATIONS AT (530) 587-4119
VIOLATIONS SUBJECT TO ARREST AND PROSECUTION PURSUANT TO LOCAL AND FEDERAL LAW.

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

Inspector Company: Day Wireless

Site Name/Location: Dry Lake

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.32072 -120.10333

Tower Manufacturer: Unknown

District Owning/Using/Maintaining Tower: Truckee Airport

Tower Model: Unknown

	OK? (Y/N/NA)	Deficiencies Found	Preventive Maintenance Performed	Photo number, Located in index
1. Structure Condition				
1.1 Check for damaged members (legs and bracing)	Y	60' level, bent horizontal bracing sagging from climbing weight.	Monitor annually, avoid putting weight on the horizontal bracing during future install.	Photo 5251-5252
1.2 Check for loose members	Y			
1.3 Check for missing members	Y			
1.4 Check for climbing facilities, platforms, catwalks – all secure and functional	Y			
1.5 Check for loose, damaged, corroded and/or missing bolts and/or nut locking devices. Tighten or replace as needed.	Y	.		
1.6 Check for visible cracks in welded connections	Y			
2. Finish				
2.1 Check overall paint and/or galvanizing condition	Y			
2.2 Check for overall rust and/or corrosion condition including mounts and accessories	Y			
2.3 Check FAA color marking conditions. Rate condition on scale of 1 to 10 in place of Y/N/NA response, where 10 = best case condition, 5 = fair condition and 1 = worst case condition.	Y-2	Paint has faded and chipped away with the weather. No corrosion was visible.	Monitor annually for corrosion.	
2.4 Check for water collection in members and remedy (e.g., unplug drain holes, etc.)	Y			
3. Lighting				
3.1 Check conduit, junction boxes, and fasteners (weather tight and secure)	Y			
3.2 Check drain and vent openings (verify they are unobstructed and clear as needed)	Y			
3.3 Check wiring condition	Y			
3.4 Check light lenses	Y			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

Inspector Company: Day Wireless

Site Name/Location: Dry Lake

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.32072 -120.10333

Tower Manufacturer: Unknown

3.5 Check bulb condition	Y			
3.6 Check controllers (verify they are functioning)	Y			
3.6.1 Check flasher	N/A			
3.6.2 Check photo control	N/A			
3.6.3 Check alarms if available	N/A			
4. Grounding				
4.1 Check connections	Y	Very little grounding on tower base. Lightening rod bolted into the railing.		Photo 5245-5246
4.2 Check for corrosion	Y			
4.3 Check lightning protection (secured to structure)	Y			
4.4 Check ground integrity and verify attachment to tower base.	N/A			
4.5 Check grounding of guy points.	Y			
5. Antennas and Feed Lines				
5.1 Check antenna condition	Y			
5.2 Check mount and/or ice shield condition (bent, loose, and/or missing members)	Y			
5.3 Check feed line condition (flanges, seals, dents, jacket damage, grounding, etc.)	Y			
5.4 Check hanger condition (snap-ins, bolt on, Kellum grips, etc.)	Y			
5.5 Verify they are properly secured to structure	Y			Photo 5228
5.6 Check for proper feed line drip loop on all cables.	Y			
6. Other Appurtenances (walkways, platforms, sensors, floodlights, etc.)				
6.1 Check condition	Y			
6.2 Verify they are properly secured to structure	Y			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

Inspector Company: Day Wireless

Site Name/Location: Dry Lake

Inspector Name: Ryan Hall

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39.32072 -120.10333

Tower Manufacturer: Unknown

7. Check Insulator Condition				
7.1 Check for cracking and chipping	N/A			
7.2 Check for cleanliness of insulators	N/A			
7.3 Verify spark gaps are set properly	N/A			
7.4 Check isolation transformer condition	N/A			
7.5 Verify bolts and connection are secure	N/A			
8. Guys				
8.1 Check strand condition (corrosion, breaks, nicks, kinks, etc.)	N/A			
8.2 Check guy hardware Conditions	N/A			
8.2.1 Check turnbuckles or equivalent (secure and safety properly applied)	N/A			
8.2.2 Verify cable thimbles are properly in place (if required)	N/A			
8.2.3 Verify service sleeves are properly in place (if required)	N/A			
8.2.4 Check cable connectors (end fittings)	N/A			
8.2.4.1 Verify cable clamps are applied properly and bolts are tight	N/A			
8.2.4.2 Verify wire serving is properly applied	N/A			
8.2.4.3 Verify there are no signs of slippage or damaged strands	N/A			
8.2.4.4 Check preformed wraps – properly applied, fully wrapped, and sleeve in place	N/A			
8.2.4.5 Verify poured sockets are secure and showing no separation	N/A			
8.2.4.6 Verify shackles, bolts, pins and cotter pins are secure and in good condition	N/A			
8.3 Measure guy tensions. Record in worksheet Record of Guy Wire Tension, included as a separate tab in this file.	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

Inspector Company: Day Wireless

Site Name/Location: Dry Lake

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.32072 -120.10333

Tower Manufacturer: Unknown

9. Concrete Foundations				
9.1 Ground condition	Y			
9.1.1 Check for settlement, movement or earth cracks	Y			
9.1.2 Check for erosion	Y			
9.1.3 Assess site condition (standing water, drainage, trees, etc.)	Y	Uneven ground surrounding tower, overturned stumps and down trees.		
9.2 Anchorage condition	Y			
9.2.1 Check nuts and/or nut locking device for tightness and acceptable condition	Y			
9.2.2 Check grout condition	N/A			
9.2.3 Check anchorages and/or anchor rod condition	Y			
9.3 Check concrete condition	Y	Finish looks good, sides are exposed and unfinished.	Monitor annually.	Photo 5226-5227
9.3.1 Check for cracking, spalling, or splitting	Y			
9.3.2 Check for chipped or broken concrete	Y			
9.3.3 Check for honeycombing	Y			
9.3.4 Check for low spots to collect moisture	Y			
10. Guyed Mast Anchors				
10.1 Check for settlement, movement or earth cracks	N/A			

Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

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Site Name/Location: Dry Lake

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Tower Manufacturer: Unknown

10.2 Check for backfill heaped over concrete for water shedding	N/A			
10.3 Check for anchor rod condition below earth (Maintain required structural capacity of anchor during exploration. Attachment to temporary anchorage may be required)	N/A			
10.4 Check corrosion control measures (galvanizing, coating, concrete encasement, cathodic protection systems, etc.)	N/A			
10.5 Check for anchor heads clear of earth	N/A			
11. Tower Alignment				
11.1 Check tower plumb and twist. Generate report with findings and include with consolidated report.	Y			
12. Compound Area				
12.1 Check condition of access road and parking area.	Y	Overgrown access way with uneven ground.		
12.2 Check condition of fences and gate(s)	N/A			
12.3 Check compound for excessive underbrush growth, obstructions, debris, etc.	Y	See note 9.1.3		
12.4 Check electrical entrance.	Y	Overhead power.		
12.5 Check general site conditions.	Y			
13. Building				
13.1 Check condition of building. (Optional)	N/A			
13.2 Check roof of building for damage or deterioration. (Optional)	N/A			
13.3 Check security light. (Optional)	N/A			
14. Signage				
14.1 Check for Radiation and ASR signage and notate in additional comments and photograph.	Y	No RF warning signs.	Add signage.	

Radio Tower Inspection and Maintenance Checklist

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Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

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Inspector Name: Ryan Hall

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Radio Tower Inspection and Maintenance Checklist

Date(s) of Inspection: 11/14/2019

Inspector Company: Day Wireless

Site Name/Location: Dry Lake

Inspector Name: Ryan Hall

GPS Co ordinates Lat/Long
39.32072 -120.10333

Tower Manufacturer: Unknown

Additional Comments. Attach additional sheets as needed. Number of additional sheets attached: _____

Tower is in generally good condition. Very clean equipment installs. Tower paint has faded and chipped away, but there is zero corrosion visible. Tower members are thin gauge steel that can only with stand minimal weight on the horizontal bracing.

Attachments included with this document? Site photos

If Yes, number of pages included as attachments:

The signature on this document will certify that the inspection and maintenance of this tower has been completed.

Contractor's Inspector Signature: Ryan J Hall

ACE-IT Record of Radio Tower Guy Tension Readings

Date(s) of Inspection:

Inspector Company:

Site Name/Location:

Inspector Name:

District Owning/Using/Maintaining Tower:

Notice - Guy wire tensions should not be modified without prior ACE-IT approval.

Method Used (Describe equipment and method used):

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Wind Velocity - _____ MPH

Wind Direction - _____

Guy Level	Cable Size	Vertical Height (Elev.)	Horizontal Distance to Anchor	Required Tension	Tension as Checked	Corrected Tension (See Notice Above Before Proceeding)
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Comments / Issues Needing Attention

ACE-IT Record of Radio Tower Location/ Directions

Provide directions to tower site location from major road location. Step by Step directions. Additional directions by maps can be used.

Start Point Location

59 FT
11
10
9
8
7
6
5
4
3
2
1
60 FT
.1
.2
.3
.4
.5
.6
.7