Salina Airport Authority
3237 Arnold Avenue
Salina, KS 67401

Report 1 - Structural Condition Assessment

Hangers P1-P4, P13

JANUARY 27, 2022

PREPARED FOR:
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Christopher Leaton
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Date: 2022.01.27 16:18:56 -06'00'

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Christopher Leaton, PE
Sr. Forensic Engineer

Isaac M. Gaetz
Division Manager

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ATTACHMENTS

1.0 ASSIGNMENT

As requested by Zurich American Insurance Company ("Zurich"), The Vertex Companies, Inc. ("VERTEX") visited the property of Salina Airport Authority ("Insured") to evaluate the cause and extent of reported elevated winds to multiple buildings, structures, and roofs. Christopher Leaton, PE inspected the property on January 11, 2022, and prepared this report. Isaac M. Gaetz reviewed the findings. The inspection included the taking of photographs, measurements, and observations. Maynard Cunningham (Salina Airport Authority) and Asheiki Preston (Building Consultant with the RMC Group) were present during our investigation.

2.0 PROPERTY DESCRIPTION

The property was a regional airport that was at 3237 Arnold Avenue located in Salina, Saline County, Kansas. The Salina Regional Airport was operated by the Salina Airport Authority. The Salina Airport Authority managed a total of approximately (75) facilities that included buildings, multiple hangars of various sizes and configurations, and other structures which included a water storage tank and a water tower.

VERTEX inspected a total of fifteen structures including ten hangers and five buildings which were the subject of the investigation. The T-shaped "P" Hangars, Hangars P1 thru P4 and P13, were the subject of this report. Separate reports address the other structures of the investigation. For the purposes of this report, Hangars P1 thru P3 and Hangar P13 faced west, and Hangar P4 faced east (see **Attachment A,** Location Map and Aerial View and **Attachment C**, Building Layout and Number).

Hangars P1 thru P4 and Hangar P13 were T-shaped hangars that were similar in their construction. The hangers had a tall center bay with a shorter bay on each side. The center bay

roof was gabled, and the side bay roofs sloped to the rear. The center bay had an overhead door, and the side bays had bifold doors. The hangar walls and roofs were framed with rectangular steel tube clad with fluted metal panels. The frame perimeter bottom members for the center bay were steel channels. The frame perimeter bottom members for the side bays were rectangular steel tubes. The hangar frames sat directly on the tarmac pavement. The perimeters of the hangar frames were secured to the tarmac concrete pavement with metal tie-down straps and anchor bolts (see **Attachment D,** for Hangar Configuration and Sizes and **Attachment E**, Photos 1 and 2).

3.0 EVENT SUMMARY

Maynard Cunningham reported that on or around December 15, 2021, elevated winds and windborne debris had affected the following airport buildings, hangars, and roofs:

- T-shaped Hangars P1 thru P4 and P13,
- Hangars A8, Hangars D5 thru D8, and Hangar 606
- Buildings 120, 412, 504, 655, and 959.

He reported that following effects to Hangars P1 thru P4 and Hangar P13:

- Hangar P1: The center overhead hangar door and the left folding door had lost connection to their tracks and fallen. The right folding door did not operate correctly.
- Hangars P2 thru P4: The center overhead and both folding doors did not operate correctly.
- Hangar P13: The hangar had been lifted and caused the hangar tie-downs to be partially withdrawn. Several frame members of the hangar structure had been bent. The center hangar door had partially fallen inward.

4.0 METEOROLOGICAL DATA

VERTEX reviewed storm data as reported by the National Weather Service (NWS) for December 15, 2021. The NWS reported:

> *A low pressure system of historic strength led to a variety of high-end weather impacts from the central Plains to the Upper Midwest and Great Lakes December 15-16. An unprecedented December severe weather unfolded over portions of Minnesota and Wisconsin Wednesday evening, with the Storm Prediction Center issuing their farthest-north Moderate Risk for the month of December. A serial derecho moving at 60-80 mph tracked from Kansas to Wisconsin, resulting in over 560 reports of damaging wind and over 60 tornadoes. A total of 57 "significant severe" wind gusts (75+ mph) were reported, breaking the daily record of 53 set on August 10, 2020.*[1]

VERTEX also reviewed monthly climate data for the Salina Regional Airport, and the greatest reported wind was 89 mph from the west-southwest on December 15, 2021 (see **Attachment C**, Meteorological Data).

5.0 OBSERVATIONS

VERTEX inspected the exterior and the interior of Hangars P1 thru P4 and Hangar P13. We observed the following conditions (see **Attachment A** for orientation, **Attachment D** for layout, and **Attachment E** for photographs):

[1] https://www.weather.gov/mpx/HistoricStormDecember2021

Hangar P1

The hangar exterior did not have missing roof or wall panels. The left bay roof had two roof panels with dents to their flutes, and the metal panels were displaced downward. The left bifold door was folded and detached and was laying on the concrete slab on the left bay floor. The right bifold door operated and did not apparently bind. The center overhead door was missing. The ends of the trim above the overhead door were bent. The overhead door tracks on both sides were bent. The overhead door hardware and spring assemblies were detached, and several pieces of the assemblies were laying on the center bay hangar floor. The track bolt for the sliding door was not bent, and the ends of the bolt were marred. The bottom frame member for the left bay was bent and fractured. The top of the member at the bend was fractured, and the fracture surfaces had surface corrosion from apparent corrosion. The gap above the right bifold door and the frame appeared to be uniform and was approximately one inch (see Photos 3 thru 11).

Hangar P2

The hangar doors for Hangar P2 were in place and were not apparently bent or deformed. The hangar bifold doors operated. The overhead door was vertical but did not operate. The upper rollers and door tracks on both sides of the overhead door were bent. The metal cover plate for the left bifold door was bent. The bent surfaces for the cover plate had a dulled appearance. The track bolt for the left bifold door was bent (see Photos 12 thru 15).

Hangar P3

VERTEX inspected Hangar P3 from the exterior since the hangar was locked and was not accessible. The north wall of the center bay had a wall panel had a linear dent and was fractured along the dent. The area left of the fracture had vertical discolored streaks. The fractured edges were rounded and dulled in appearance. The upper corners of the overhead doors were displaced inward. The top center of the overhead door appeared to be bent inward. The trim above the overhead door was bent in the middle and at its ends (see Photos 16 thru 18).

Hangar P4

The hangar exterior was not missing wall or roof panels. The left bifold door had a wall panel dented inward toward the building interior. The west walls of the center bay and left bays had wall panels dented inward toward the building interior. The center bay had three dented panels, and the left bay had one bent panel. The indentions were linear and were dulled in appearance. The ends of the trim above the overhead door were bent. The center bay roof had two roof panels that were bent. One of the bent roof panels was lifted upward, and there was a visible gap at the adjacent panel joint. The other bent roof panel was bent at its flute and was visibly displaced downward (see Photos 19 thru 21).

The overhead door did not operate. The left bifold door did not operate, and the right bifold door required substantial force by hand to operate. The top left side of the right bifold door was missing its track bolt. The gap above the right bifold door was not uniform and was less than one inch. The top of the left bifold door sloped to the center bay at 0.3 of a degree. The gap above the left bifold door appeared to be uniform at approximately one-inch wide. The north wall of the right bay was out of plumb by 1.2 degrees. The north-south roof member for the right bay sloped at 0.7 of a degree toward the exterior wall. The east-west roof purlins for the left and for the right bays were 0.3 of a degree or less from a degree from level (see Photos 22 thru 24).

Hangar P13

The overhead door was detached and displaced inward towards the hangar interior and was resting in a diagonal position. The right side of the door was supported by the center bay upper wall. The roof of the right bay sloped towards the center bay. The lower left corner of the overhead door was resting against the left bifold door and had pushed the right side of the left door outward. The upper right door track and roller were bent. The bolts that attached the overhead door hardware were bent. The left side of the overhead door was bent, and the strapping on the back of the door was bent and warped (see Photos 25 thru 31).

The channel for the bottom frame assembly on the right side of the center bay was bent upward, and one of the flanges was buckled. The tie-down straps for the bottom frame assembly were loose, and the anchor rods were withdrawn from the pavement. Multiple anchor straps for hangar tie-downs were loose around the hangar perimeter, and the anchor rods for the tie-downs had been partially withdrawn from the pavement. The diagonal rod bracings for the center bay side walls were not apparently bent (see Photos 32 thru 34).

6.0 CONCLUSIONS

Based on our investigation and within a reasonable degree of engineering certainty, it is the opinion of VERTEX that the reported T-shaped “P” Hangars had been affected by elevated winds on or around December 15, 2021. The following components for each hangar were affected by elevated winds:

- Hangar P1: The two roof panels for the left side bay roof. The overhead and left bifold doors including their springs, hardware, and track assemblies. The upper track and hardware for the right bifold door.
- Hangar P2: The hardware and spring assemblies for the overhead door. The upper track and hardware for both bifold doors.
- Hangar P3: The upper cross member of the overhead door. The overhead door upper rollers and tracks.
- Hangar P4: The left and right bay frames above the overhead doors. The upper tracks and hardware for both bifold doors. The upper rollers, tracks, and spring assemblies for the overhead door. The two center bay roof panels.
- Hangar P13: The overhead door including its upper rollers, tracks, and spring assemblies. The left bifold including its upper track and hardware. The channel for the bottom frame assembly on the right side of the center bay. The hangar tie-downs.

Review of meteorological data indicated that elevated winds at approximately 89 mph from the west-southwest had occurred at the property of the Salina Regional Airport on or around December 15, 2021. These elevated winds would have been capable of affecting hangar frame systems and components and of generating windborne debris. Additionally, the elevated winds would have been capable to affect the overhead and bifold doors including their tracks and hardware.

The hangars doors for Hangars P1 thru P3 were affected by elevated winds on or around December 15, 2021. Hangars P1 thru P3 faced west, and the predominantly westward winds had affected their overhead and bifold doors. The hangar overhead doors did not have side-tracks and were only supported at their upper corners. Consequently, the upper rollers and tracks would have had to solely resist the wind pressures on the overhead door and appeared to have failed due to the elevated winds. Similarly, the bifold doors were supported at their top tracks and failed due to the elevated winds. However, the dented and fractured exterior wall panels on the north wall of Hangar P3 were not the result of the elevated winds. The linear, dulled appearance of the dents along with the adjacent discolored streaks were consistent with a mechanical impact. Moreover, these dents were on the north side of the building and would not have been exposed to the westwardly winds. These were indicators that the dents on the north walls predated the elevated winds on or around December 15, 2021.

Hangar P4 also was affected by elevated winds on or around December 15, 2021. Although Hangar P4 faced east, the overhead and bifold doors appeared to have been affected by downward pressures on the roof. Hangar P4 was on the north side of a line of interconnected hangars and could have sustained higher wind pressure than the other “P” hangars to which it was connected. The east side of the hangar roof appeared to have been displaced downward. The downward movement of the east side of the roof appeared to have displaced the frames above the bifold doors downward and caused the hardware to fail and the doors to bind on the

frame. Moreover, the downward displacement of the frames above the bifold doors appeared to have also downwardly displaced the sidewalls of the center bay and caused the overhead door to bind. The two center bay roof panels were further indicators that the roof had experienced wind pressures that would have affected the east side of the building. While the west walls had wall panels with dents, the dents were linear and dulled in appearance and were consistent with mechanical impacts that predated the elevated winds on or around December 15, 2021.

Hangar P13 was also affected by elevated winds on or around December 15, 2021. While Hangar P13 faced west similar with Hangars P1 thru P3, it also was an individual, larger hangar that was isolated from the other "P" hangars. The other "P" hangars were interconnected, and their interconnection appeared to have provided them shielding from the wind. The roller assemblies for the Hangar P13 appeared to be the same size as the other smaller "P". The Hangar P13 overhead door roller assemblies would have been exposed greater wind forces due to its greater size and its lack of shielding from the wind. Consequently, these roller assemblies appeared to have failed which would have allowed the overhead door to the detach and displace inward towards the hangar interior. The failure of the overhead door would have subsequently allowed the wind to induce uplift on the partially open structure. The tie-down failures for the hangar were consistent with uplift. Further, the upward bending of the bottom channel on the right side of the center bay was consistent local buckling that can occur between supports such as hangar tie-downs.

7.0 GENERAL REPAIR PROTOCOL

Irrespective of insurance coverage, VERTEX offers the following general repair recommendations to address observed damages. All work should be performed in accordance with building codes adopted by the governing jurisdiction.

One feasible repair is as follows:

Hangar P1

1. Replace the overhead and left bifold doors including their springs, hardware, and track assemblies.
2. Replace the upper track and hardware for the right bifold door.

Hangar P2

1. Replace the hardware and spring assemblies for the overhead door.
2. Replace the upper track and hardware for both bifold doors.

Hangar P3

1. Replace the upper cross member of the overhead door.
2. Replace the overhead door upper rollers and tracks.

Hangar P4

1. Brace, shore and support the upper roofs supported by the upper left and right center bay sidewall frames.
2. Remove the side bay roof assembly (purple shaded area in Figure 1).
3. Remove, replace, and weld the 1.75-inch square tube member of the roof assembly that supports the tracks for the bifold doors (blue arrow in Figure 1).
4. Remove and reinstall the center bay upper sidewall wall panels.
5. Jack and level the upper center bay sidewall frames that support the lower and upper roofs (green arrow in Figure 1).
6. Remove, replace, and weld the 2-inch square tubes roof strut that supports the lower side bay roofs (red arrow in Figure 1).
7. Remove and replace the diagonal rod brace (orange arrow in Figure 1).
8. Replace the upper tracks and hardware for both bifold doors.

9. Replace the upper rollers, tracks, and spring assemblies for the overhead door.
10. Remove and reinstall the overhead and both bifold doors.
11. Replace the exterior wall panel for the left bifold door.
12. Replace two center bay roof panels.

Figure 1. View of a typical upper side wall frame.

Hangar P13

1. Complete bullets 1 thru 7 and Figure 1 for Hangar 4 above.
2. Remove and reinstall the right bifold door.
3. Remove the left bifold door and replace the following:
    a. Approximately (6.5) feet of horizontal 1” square tube.
    b. Approximately (7) feet of vertical 2” square tube.
    c. Approximately (7) feet of the aluminum cover plate.
4. Remove the overhead door and replace the following doors components:
    a. Approximately (14 .25) feet of aluminum 3”x1” angle.
    b. Approximately (14.25) feet of aluminum 4” deep channel with 0.5” flanges.
    c. Approximately (125) feet of aluminum strapping on the back of the door.
5. Remove the right center bay bottom frame assembly and replace the following:
    a. Approximately (37) feet of 5” deep channel with 2” flanges the length of the center bay (red arrow in Figure 2).

b. Approximately (17.5) feet of sloped 2” square tube on the 5” deep channel (green arrow in Figure 2).
c. Approximately (2) feet of vertical 2” square tube for the vertical frame members (blue arrows in Figure 2).

6. Remove and replace approximately (22) tie-down straps including their anchor bolts.

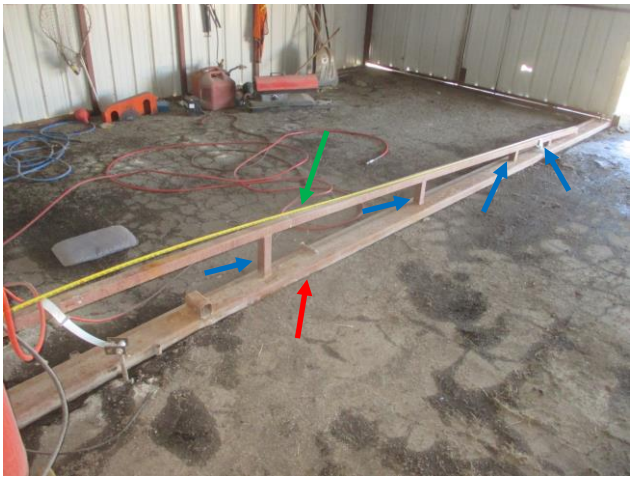


Figure 2. View of right lower frame assembly to be replaced.

VERTEX recommends that the design of the bracing and shoring be designed by a qualified, licensed design professional in the Kansas. The replacement of the aluminum and steel members should be completed by a qualified welder for these material types.

8.0 CLOSING

A visual inspection of the property was performed and reviewed as part of our investigation. Unless noted in this report, no destructive testing was performed. A complete analysis of the existing framing members or the connections for structural design capacity versus existing codes was not conducted. All repairs and construction should conform to the currently applicable Building Code. The repairs, including any temporary shoring that may be needed, should be

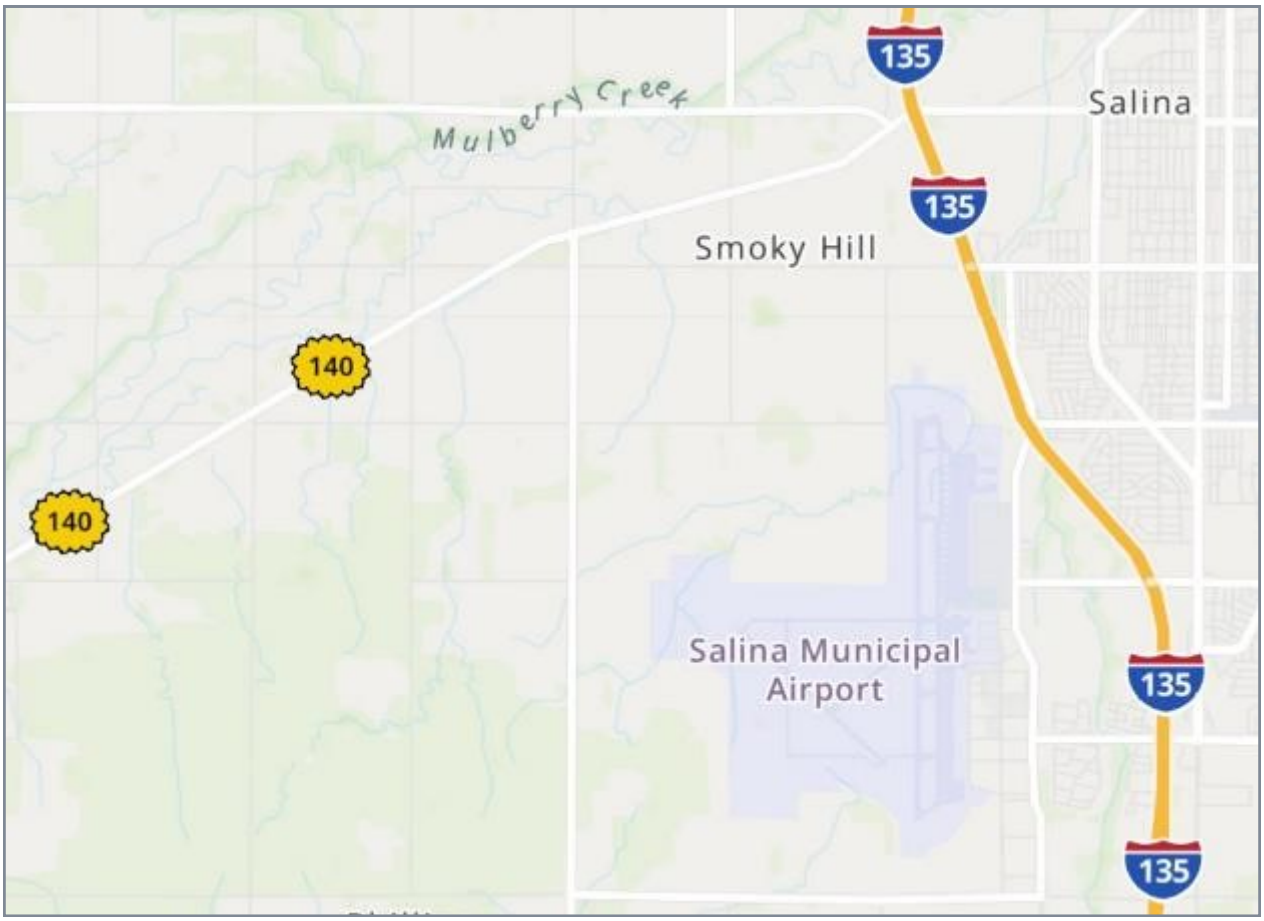
specified, designed, and installed by properly licensed professionals familiar with that type of construction.

This report was prepared for the exclusive use of Zurich and is not intended for any other purpose. VERTEX has not reviewed the applicable insurance policy, if any, for the purpose of forming an opinion as to coverage and is not offering a coverage opinion. Our report was based on observed site conditions and the information available at the time of our inspection. We reserve the right to amend this report and our conclusions if new information becomes available and revisions are necessary and warranted. Not all photographs taken by VERTEX during the site inspection were included with this report. Additional photographs in our records are available upon request.

If you have questions or comments, please contact Christopher Leaton or Isaac M. Gaetz at (888) 298-5162. We appreciate this opportunity to assist Zurich and the policy holder.

ATTACHMENT A:

SITE LOCATION MAP



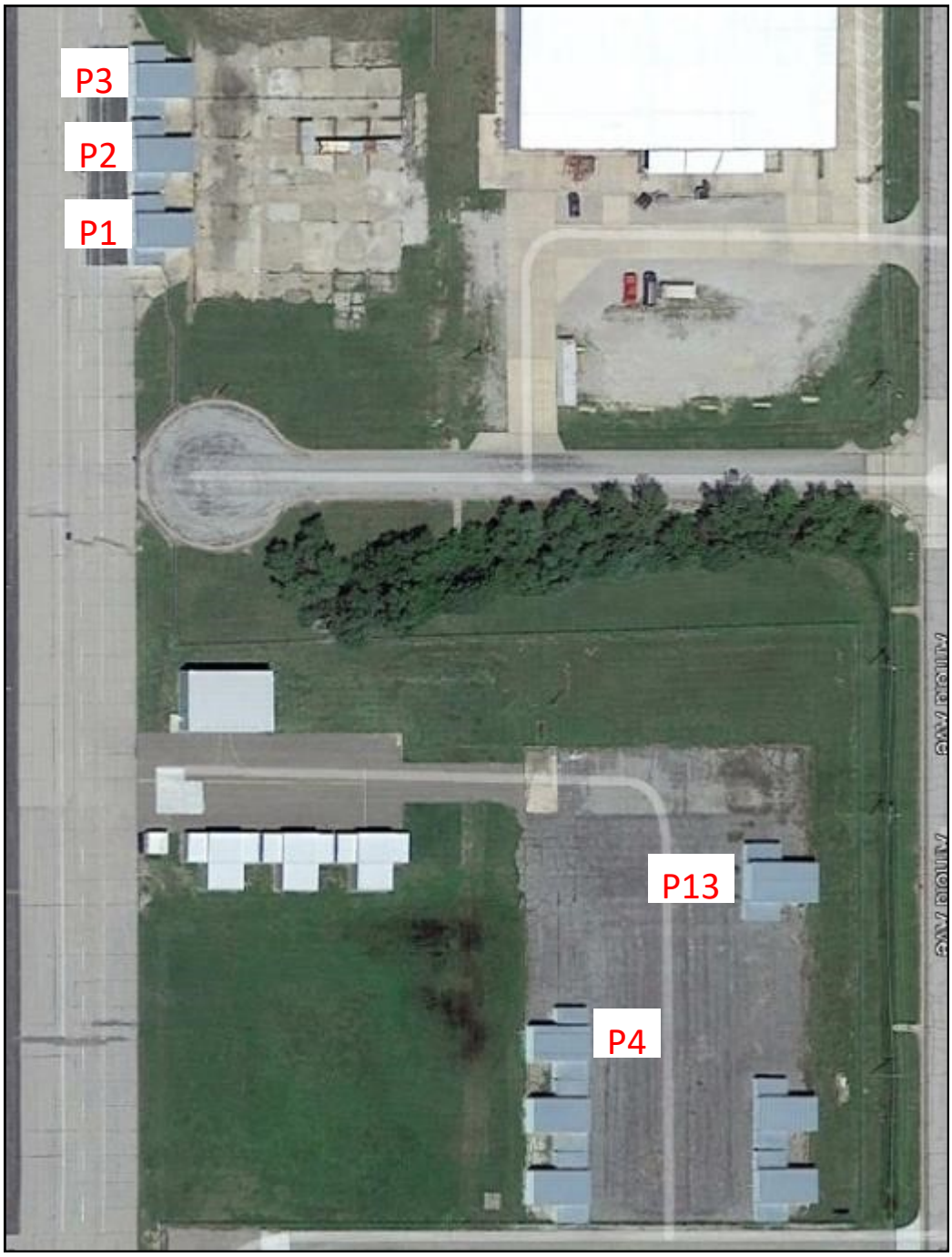
ATTACHMENT A:

AERIAL VIEW

Airport Aerial View

ATTACHMENT A:

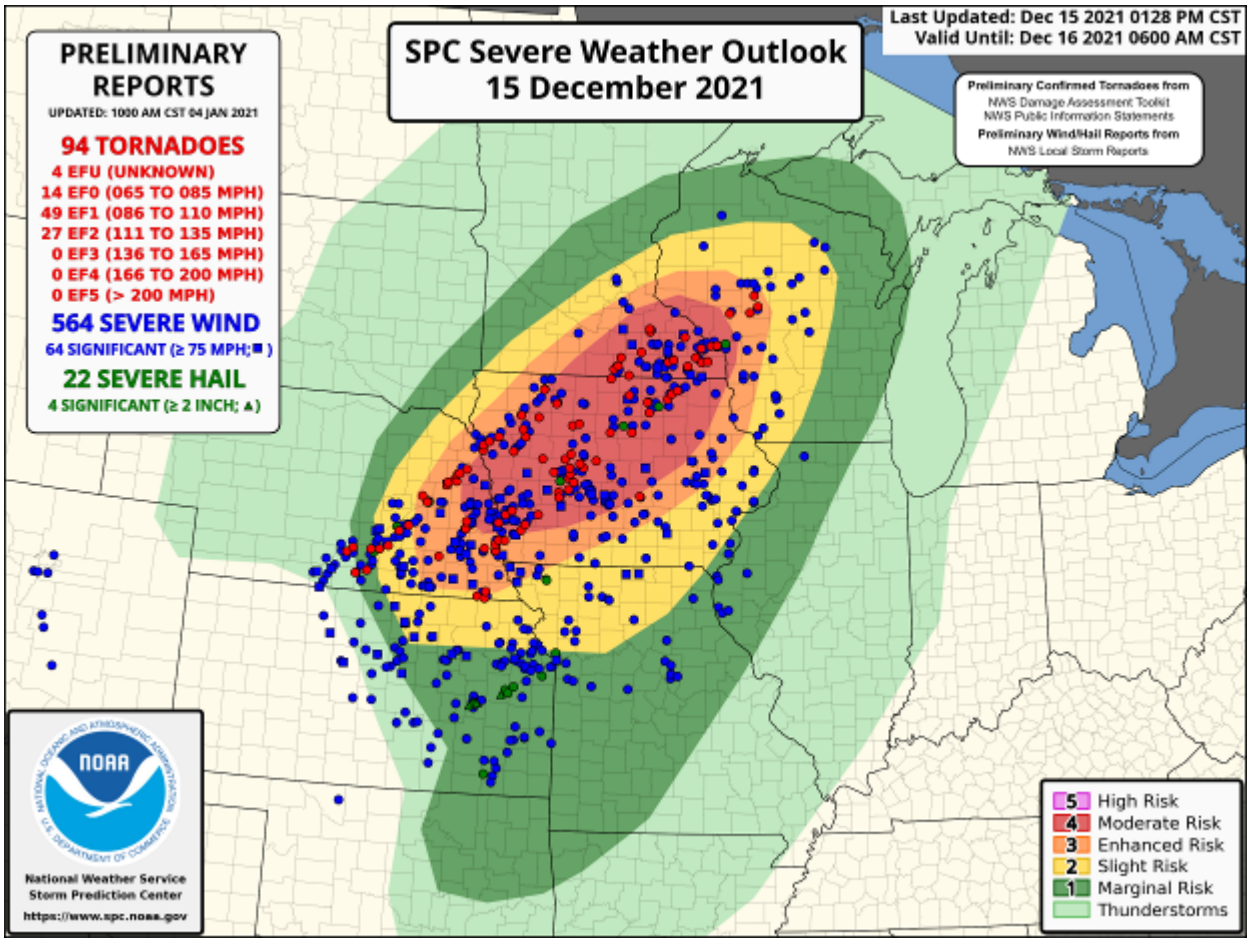
AERIAL VIEW



“P” Hangars Aerial View

ATTACHMENT B:

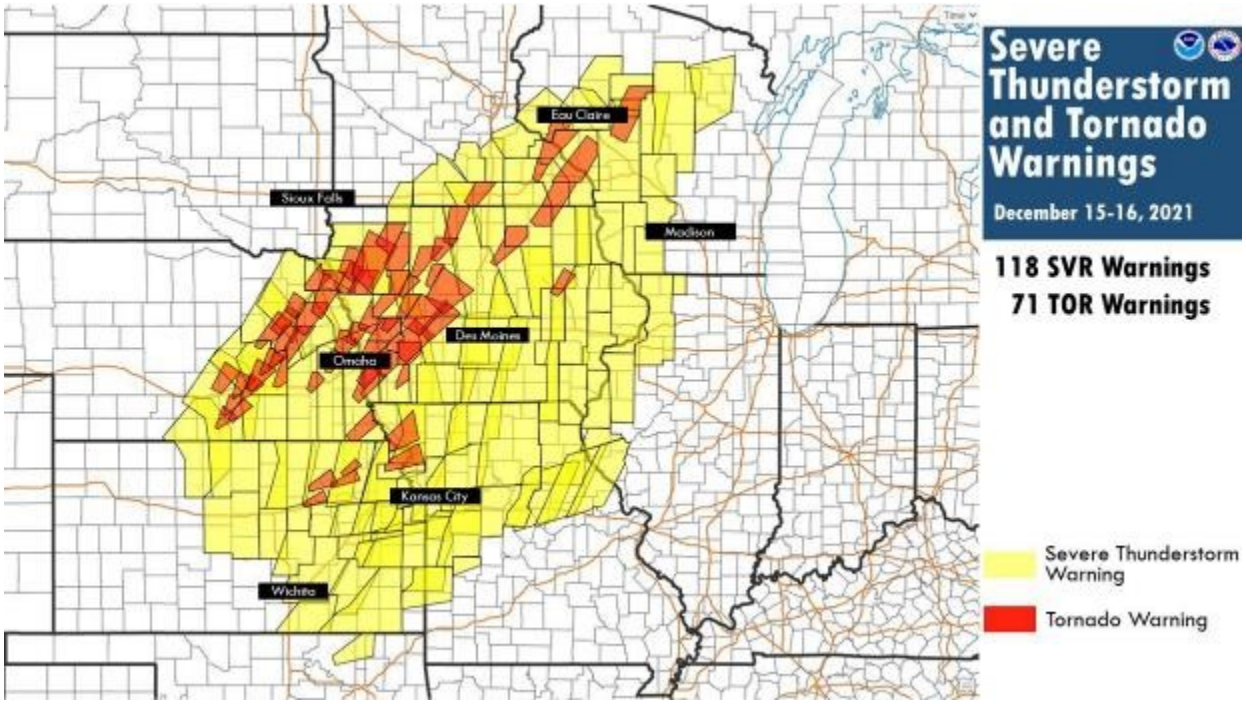
METEOROLOGICAL DATA



Reference: https://www.weather.gov/mpx/HistoricStormDecember2021

ATTACHMENT B:

METEOROLOGICAL DATA



Reference: https://www.weather.gov/mpx/HistoricStormDecember2021

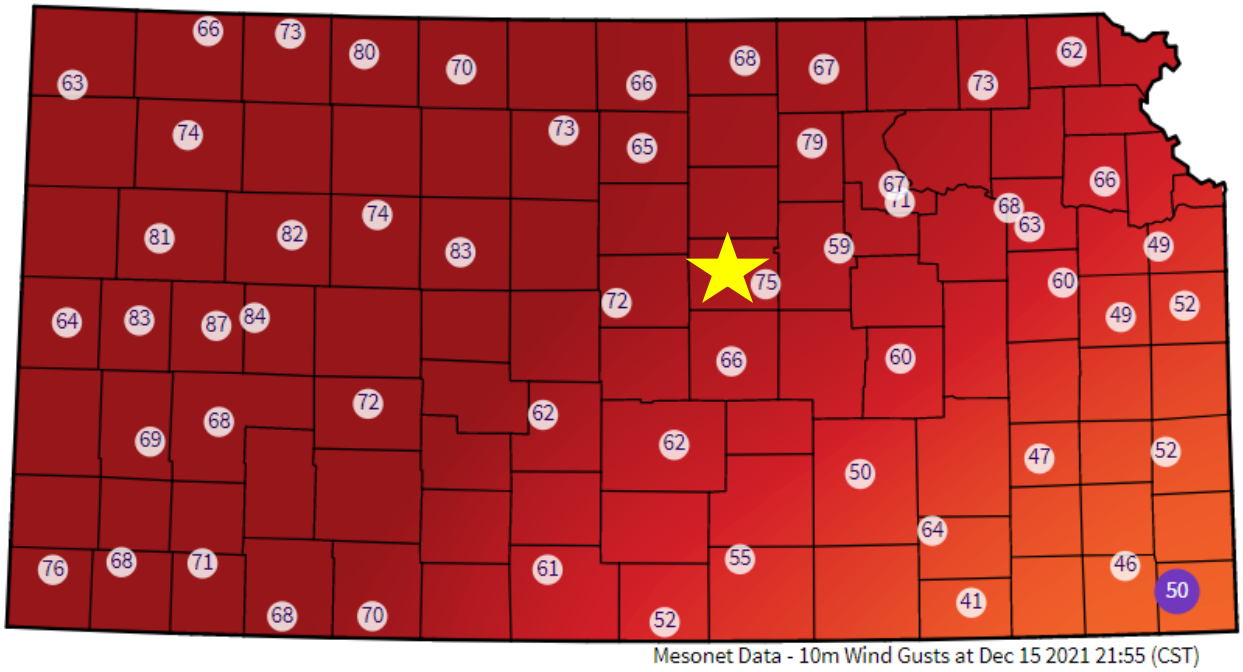
ATTACHMENT B:

METEOROLOGICAL DATA

24HR Peak Winds (mph)

Russell Municipal Airport	100	3.2 E New Cambria (UPR)	95	Salina Regional Airport	89
K-61 @ K-153 Interchange McPherson	85	Hutchinson Municipal Airport	84	5.7 NW Smolan (UPR)	78
2.4 W Bunker Hill	75	Wichita	71	1.9 NE Durham	70
Wichita Eisenhower Airport	69	1.8 N Marion	68	Allen Co. Airpt. Iola	68
2.8 W Langdon (UPR)	66	Newton City County Airpt	66	El Dorado Memorial Airpt	66
Colonel James Jabara Airport	66	6.4 E Kanopolis (UPR)	64	Mcconnell AFB	63
Great Bend Municipal Airpt	63	I-35 bridge over Whitewater River	63	Augusta	63
Lyons-Rice County Municipal Airp	62	Lyons Rice Co. Municipal Airpt	62	Rose Hill	62
0.8 W Canton (UPR)	61	Chanute Martin Johnson Airpt	61	I-135 @ 17th St.	61
US-54 - Eureka	60	Lloyd Stearman Field Airport	60	Tallgrass Prairie	58
Strother Field Airport	58	Beech Factory Airport	58	Kingman	58
Haysville	57	Coffeyville Municipal Airpt	56	0.7 SW Whitewater	55

10m Wind Gust



Mesonet Data - 10m Wind Gusts at Dec 15 2021 21:55 (CST)

Reference: https://www.weather.gov/ict/event_2021Dec15thWindFireSVR

ATTACHMENT B:

METEOROLOGICAL DATA

000
CXUS53 KICT 082307
CF6SLN
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: SALINA KS
MONTH: DECEMBER
YEAR: 2021
LATITUDE: 38 47 N
LONGITUDE: 97 39 W

TEMPERATURE IN F:							:PCPN:		SNOW:	WIND			:SUNSHINE:		SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
									12Z	AVG	MX	2MIN						
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	69	29	49	12	16	0	0.00	M	M	6.1	16	230	M	M	0		21	220
2	72	37	55	18	10	0	0.00	M	M	4.2	12	240	M	M	0		16	250
3	65	34	50	14	15	0	T	M	M	9.8	22	20	M	M	0		30	30
4	53	29	41	5	24	0	0.00	M	M	8.0	15	150	M	M	2		19	150
5	63	38	51	15	14	0	0.00	M	M	14.8	37	350	M	M	1	1	46	350
6	38	24	31	-4	34	0	0.00	M	M	12.0	35	340	M	M	0		44	340
7	47	25	36	1	29	0	0.00	M	M	10.7	21	200	M	M	1		29	190
8	59	20	40	6	25	0	0.00	M	M	10.6	20	170	M	M	0		29	170
9	65	34	50	16	15	0	0.00	M	M	9.0	23	300	M	M	0		31	310
10	70	32	51	17	14	0	0.00	M	M	16.8	32	320	M	M	2		45	340
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13	60	25	43	10	22	0	0.00	M	M	5.8	16	160	M	M	0	8	21	160
14	64	38	51	18	14	0	0.00	M	M	12.5	23	190	M	M	0		36	170
15	76	13	45	12	20	0	0.00	M	M	25.1	61	260	M	M	4	1378	88	250
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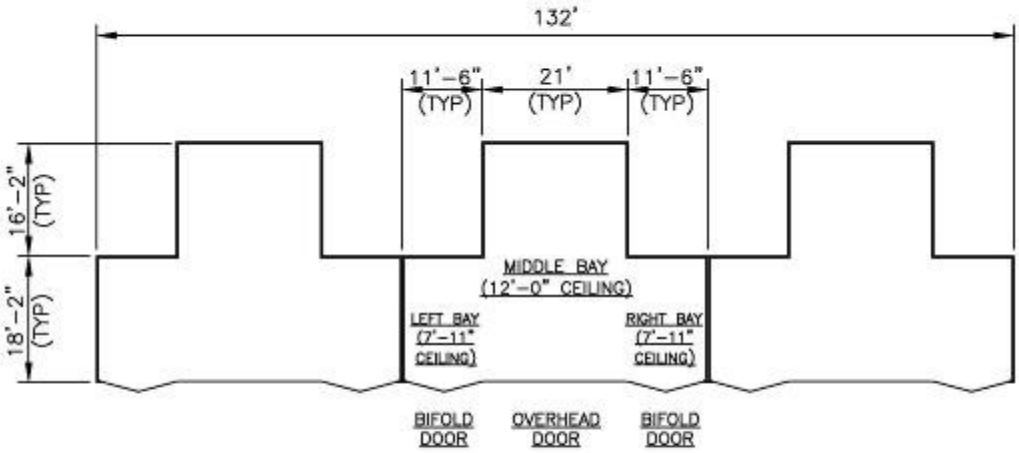
17	50	19	35	3	30	0	0.00	M	M	6.5	12	350	M	M	0		12	350
18	30	10	20	-12	45	0	0.00	M	M	9.9	16	340	M	M	2		29	310
19	43	12	28	-4	37	0	0.00	M	M	15.0	23	190	M	M	0		32	170
20	46	19	33	1	32	0	0.00	M	M	9.0	18	360	M	M	0		23	360
21	52	13	33	1	32	0	0.00	M	M	4.2	14	320	M	M	0	8	20	70
22	61	17	39	8	26	0	0.00	M	M	9.7	22	210	M	M	0		29	210
23	61	30	46	15	19	0	0.00	M	M	8.1	20	200	M	M	0	12	26	200
24	70	36	53	22	12	0	0.00	M	M	9.9	23	190	M	M	0	1	29	190
25	54	28	41	10	24	0	0.00	M	M	4.7	14	310	M	M	0		16	310
26	64	29	47	16	18	0	0.00	M	M	12.1	28	280	M	M	1		39	270
27	59	30	45	14	20	0	0.00	M	M	8.6	30	310	M	M	0		38	290
28	52	21	37	6	28	0	0.00	M	M	14.9	26	310	M	M	1		32	310
29	30	18	24	-7	41	0	T	M	M	7.5	15	10	M	M	7		21	20
30	50	18	34	3	31	0	0.00	M	M	6.5	15	180	M	M	3		21	160
31	49	21	35	5	30	0	0.00	M	M	13.4	24	350	M	M	3		30	360
SM	1725	778		755		0	0.08	M		314.3			M		28			
AV	55.6	25.1								10.1	FASTST		M	M	1		MAX(MPH)	
									MISC ---->		61	260					88	250

https://forecast.weather.gov/product.php?site=ICT&issuedby=SLN&product=CF6&format=CI&version=2&glossary=0

Airport Building Layout & Number



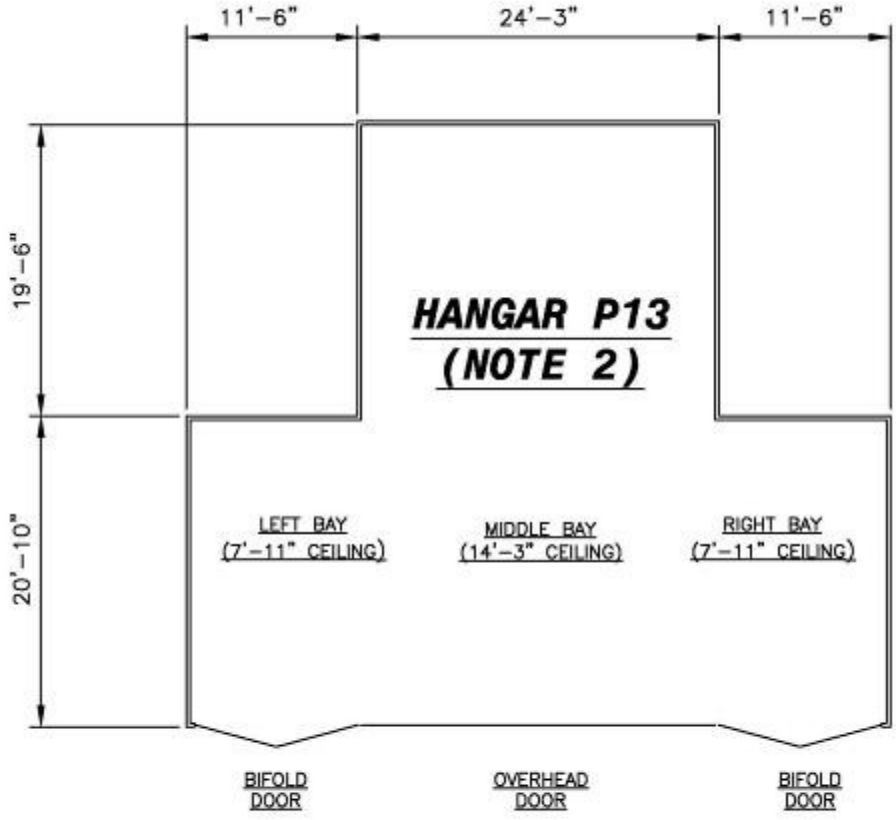
NOTES:

1. DIMENSIONS SHOWN ARE APPROXIMATE.
2. ITEMS NOTED TYPICAL OF EACH HANGAR.

HANGAR P3 ***HANGAR P2*** ***HANGAR P1***

ATTACHMENT D:

SKETCHES BY VERTEX



NOTES:

1. DIMENSIONS SHOWN ARE APPROXIMATE.
2. HANGAR P4 DIMENSIONS AND LAYOUT ARE SIMILAR.

ATTACHMENT E:

PHOTOGRAPHIC DOCUMENTATION

Photograph: 1 **Description:** View of the front elevation of the Hangars 1 thru 3 from the northwest. The “P” Hangars had similar configurations and construction.	

Photograph: 2 **Description:** View of the rear elevations of the Hangars from the east. The “P” Hangars had similar configurations and construction.	

ATTACHMENT E:

PHOTOGRAPHIC DOCUMENTATION

Photograph: 3 **Description:** View of the front elevation of Hangar P1. The overhead door was missing, and the left bi-fold door was on the hangar floor (red arrow).	

Photograph: 4 **Description:** Closeup of the bent door track (red arrow) and missing hardware (green arrow) on the left side of the overhead door for Hangar P1. Note the bent trim above the top of the overhead door opening (blue arrow).	

ATTACHMENT E:

PHOTOGRAPHIC DOCUMENTATION

Photograph: 5 **Description:** Interior view of the center bay for Hangar P1. Hangar P2 was similar.	
Photograph: 6 **Description:** View of the upper track assembly for the left bifold door for Hangar P1. Two roof panels had two flutes that were bent downward (red arrows).	

ATTACHMENT E:

PHOTOGRAPHIC DOCUMENTATION

Photograph: 7 **Description:** View of the track bolt for the left bifold door for Hangar P1.	

Photograph: 8 **Description:** View of apparent over-head door hardware on the hangar floor for Hangar P1.	

ATTACHMENT E:

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Photograph: 9 **Description:** View of a bent floor frame member for Hangar P1.	

Photograph: 10 **Description:** Closeup of the bent floor frame member for Hangar P1.	

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Photograph: 11 **Description:** View of the gap between the right bifold door and upper track for Hangar P1.	

Photograph: 12 **Description:** View of the front elevation for Hangar P2.	

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Photograph: 13 **Description:** View of the bent upper right track and roller assembly for the over-head door for Hangar P2.	
Photograph: 14 **Description:** View of the bent cover plate (red arrow) for the left bifold door for Hang-ar P2.	

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Photograph: 15 **Description:** View of a bent track bolt for the left bifold door for Hangar P2.	

Photograph: 16 **Description:** View of the front elevation for Hangar P3. The upper trim above the overhead door was bent (red arrows). The middle top of the overhead door had gap and appeared to be bent inward (green arrow).	

ATTACHMENT E:

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Photograph: 17 **Description:** The upper right corner of the Hangar P3 overhead door was displaced towards the hangar interior.	
Photograph: 18 **Description:** View a dented panel on the north side of the center bay for Hangar P3.	

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Photograph: 19 **Description:** View of the front (east) elevation of Hangar P4. The metal panel on the left bifold door was bent (red arrow).	

Photograph: 20 **Description:** View of the interior of Hangar P4. The metal roof panels were bent at two places. Note the gap in the metal roof panels at one location (red arrow).	

Photograph: 21 **Description:** View of an additional metal roof panel that was bent downward (red arrow).	

Photograph: 22 **Description:** View of the track above the above the left side of the bifold door for Hangar P4.	

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Photograph: 23 **Description:** View of level reading taken for a frame member for Hangar P4.	
Photograph: 24 **Description:** View of the end of the bottom frame for the right side of the center bay.	

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Photograph: 25 **Description:** View of the front elevation for Hangar P13.	

Photograph: 26 **Description:** View of the rear elevation for Hangar P13.	

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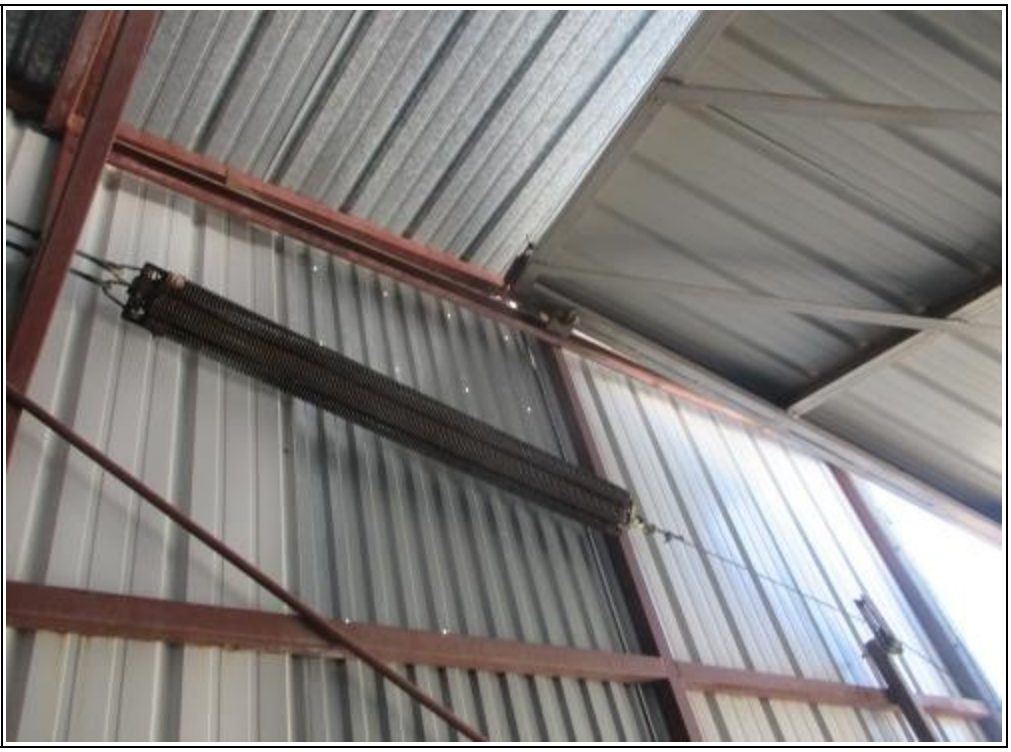
Photograph: 27 **Description:** Interior view of Hangar P13. Note that the roof frame members for Hangar P13 utilized a multiple steel tube members.	

Photograph: 28 **Description:** View of the door track and hardware for the right side of the over-head door for Hangar P13.	

ATTACHMENT E:

PHOTOGRAPHIC DOCUMENTATION

Photograph: 29 **Description:** View of the left side of the overhead door for Hangar P13. The door strapping was warped (red arrows), and the bottom left cover of the door was bent (green arrow).	
Photograph: 30 **Description:** View of the left side of the overhead door resting on the right edge of the left bifold door for Hangar P13.	

Photograph: 31 **Description:** View of the bottom member for the left bi-fold door for Hangar P13 The bottom member of the bifold door was bent (red arrow).	

Photograph: 32 **Description:** View of the bottom frame assembly on the right side of the center bay for Hangar P13. The bottom channel from bent (red arrow), and the anchor rods for the tiedown straps were partially withdrawn from the pavement (green arrows)	

ATTACHMENT E:

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Photograph: 33 **Description:** Interior view of the right wall for the center bay for Hangar P13. The diagonal bracing was not apparently bent.	

Photograph: 34 **Description:** View of the tie-down anchor straps rear of the center bay for Hangar P13. Multiple anchor rods for the tie-down straps had been withdrawn from the pavement around the perimeter of the hangar (red arrows).