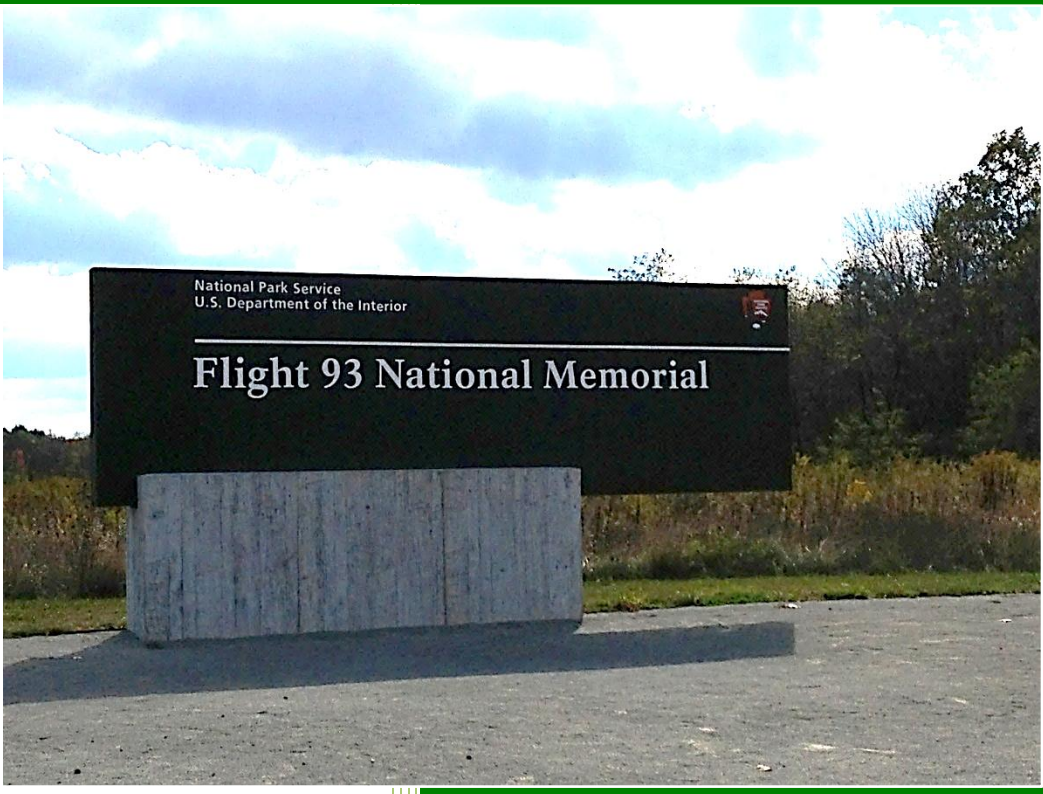
National Park Service
U.S. Department of the Interior

Flight 93 Structural Fire



Serious Accident Investigation
Factual Report
October 3, 2014

National Park Service
Flight 93 National Memorial

SERIOUS ACCIDENT INVESTIGATION FACTUAL REPORT

Accident Name:	Headquarters Structural Fire
Description:	Structural Fire
Location:	Flight 93 National Memorial
Date:	October 3, 2014

Serious Accident Investigation Team

Team Leader
JAMES A. LOACH - Associate Regional Director, Park Operations, Midwest Region

Signature Date

Assistant Team Leader
LAWRENCE E. JOHNSON - Superintendent, Ozark National Scenic Riverways

Signature Date

Chief Investigator
DONALD C. BOUCHER - Regional Structural Fire Manager, Midwest Region

Signature Date

Lead Investigator
TIMOTHY E. COLYER - Regional Chief Ranger, Midwest Region

Signature Date

Lead Investigator
GREGORY T. MONAHAN - Major, United States Park Police, Washington, D.C.

Signature Date

Safety Advisor
ERIC L. ALLEN - Division Chief, Safety, Health and Wellness, Midwest Region

Signature Date

Structural Fire Subject Matter Expert
BRIAN P. JOHNSON - NPS Structural Fire Prevention Program Manager

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Curatorial Subject Matter Expert
STEPHANIE STEPHENS - Senior Curator, Alaska Region

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Liaison to Northeast Regional Office
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Mary A Palensky 1/25/2016
Signature Date

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EXECUTIVE SUMMARY

On Friday, October 3, 2014, employees at the Flight 93 National Memorial (FLNI) park headquarters (located at 273 Park Headquarters Road, Stoystown, Pennsylvania) were working at various locations within the complex. At approximately 3:15 PM Eastern Standard Time, several of the employees noticed smoke outside the building. A number of employees observed fire on the ramp of the deck. One employee activated the fire alarm and also called 9-1-1 to summon the fire department.

The weather on Friday, October 3, 2014, was overcast with a mean temperature of 63 degrees. The average sustained winds were out of the south/southwest with wind gusts up to 31 mph. At 3:12 PM, the temperature was 66 degrees, the humidity was 73%, and the winds were out of the southeast at 12 mph with gusts up to 25 mph. Weather reports for the thirty days leading up to October 3, 2014 were relatively dry with only 1.48 inches of precipitation.

Three of the four buildings were completely destroyed by the fire. One of these buildings was utilized as curatorial storage and an exhibit preparation area. That building contained some significant artifacts (the exact number is unknown, because non-museum items were being stored with museum collections) that represented the investigation and recovery efforts from the Flight 93 crash including, the Fish and Wildlife Service Refuge Officer badge, the arborist chainsaw and climbing harness, and the U.S. flag that was flying over the U.S. Capitol on September 11, 2001. The flag was donated to the park on September 11, 2014, by former Speaker of the House Dennis Hastert.

The current replacement value of the buildings is $1,001,401. The replacement value of the furnishings, office equipment and supplies is $130,584. This does not reflect any value for collection items.

The fire investigation report submitted by the Pennsylvania State Police (PSP) Fire Marshal states the cause of the fire was "undetermined." The National Park Service Investigative Services Branch coordinated with the PSP and after conducting an investigation of the area where the fire had burned, they released the site back to the park on Saturday afternoon, October 4.

The Northeast Region Museum Emergency Response Team (MERT) responded to the park and assisted with the recovery effort of artifacts.

The NPS Central Serious Accident Investigation Team (SAIT) was ordered on Saturday, October 4, 2014, and in-briefed on Monday, October 6. The SAIT spent four days conducting interviews and gathering evidence. On Thursday, October 9, the SAIT conducted a closeout briefing with the Superintendent and the Regional Director. On Friday, October 10, the SAIT members departed to their home units.

After the on-site visit, the SAIT completed the following:

- re-interviewed witnesses and park employees
- gathered and analyzed reports and supporting documentation
- contracted for and received laboratory services from the University of Maryland analyzing the composite decking material's flame spread characteristics
- reviewed on and off-site artifact storage facilities
- considered human factors that may have contributed to the fire
- prepared a set of findings and action items

Urgent Action Required

A Servicewide Safecom was issued on April 15, 2015 drawing attention to the volatility of the plasticized lumber under certain conditions. The Safecom addresses the conditions under which the material should not be used and/or replaced (e.g. in a required path of egress from buildings). See example in Appendix B.

Significant Findings

Finding 1: Director's Order 50D, *Smoking Policy* was not effectively implemented or enforced park-wide.

Finding 2: The practice of applying mulch directly in contact with combustible building materials contributed to the rapid spread from the point of ignition.

Finding 3: Plasticized lumber decking connecting the buildings was a major contributing factor to the speed and intensity in which the fire progressed and compromised egress from the buildings.

Finding 4: FLNI stored museum collections in buildings that were not designed for collections storage and did not have fire suppression systems.

- In July 2013, more than 3,000 artifacts were moved to Somerset, PA, a location having multiple fire and security concerns and no fire suppression system.
- In August 2013, artifacts selected for exhibit in the new visitor center were moved to the headquarters and stored in a building that had no fire suppression system.

Other Findings of Significance

Finding 5: News releases inaccurately reported that loss to the collection was minimal, because items were stored in fire resistant cabinets.

Finding 6: The Accession Ledger, the legal record of collections ownership, was not properly stored in a UL listed fire resistant filing cabinet, and therefore was destroyed.

Finding 7: Failure to accession museum property in a timely manner made it impossible to account for what and how much was lost.

Finding 8: Fire and security concerns at the Somerset facility, which were noted in the 2006 Collection Management Plan (CMP), had not been addressed.

Finding 9: Trailer mounted buildings created a situation where the fire entered the building through the floor.

Finding 10: The Structural Fire Management Plan (SFMP) was insufficient and was not consistent with the response reported in the Automated Checklist Program (ACP) for the headquarters facility.

Finding 11: No Museum Collections Emergency Operations Plan (MCEOP) existed for FLNI.

Finding 12: The Scope of Collection Statement (SOCS) needs to be revised and updated.

Servicewide Implications

- Onsite FLNI curatorial sites are not meeting the requirements for museum collections management, as identified in the Office of Inspector General Report No. C-IN-MOA-0010-2008, December 2009
- Ensure standards for museum storage are met and taken into consideration in the Servicewide storage strategy
- Ensure that NPS museum policies are enforced
- Ensure superintendents are held accountable for managing collections according to standards
- Assure that museum CORE documents (SOCS, CMP, Museum Collections Fire and Security Survey, MCEOP, housekeeping plan) are current, appropriate, realistic, and followed
- Ensure the Servicewide backlog of accessioning and cataloging is thoroughly reviewed and investigated
- Elevate museum collections management in the A123 process to ensure verifiable Servicewide controls exist
- Determinations must be made to identify where plasticized wood decking should be removed from existing buildings
- Ensure proper guidelines exist for use of plasticized lumber in new projects
- Mulch and other combustibles close to buildings need to be removed to develop clearances and defensible spaces
- A determination must be made where trailer mounted buildings should be placed on a pad

ACKNOWLEDGMENTS

The substantial efforts of the responders following the accident, including park employees and

cooperators who rendered assistance, are gratefully acknowledged.

We appreciate the candor of those who provided briefings and were interviewed, and regret any discomfort that the interview process and investigation may have caused those directly or indirectly involved with the accident.

The Flight 93 National Memorial staff was extremely helpful in providing information to support this investigation, especially the park liaison and others who provided follow up information and reference materials.

NARRATIVES

Overview of the Park

Flight 93 National Memorial is located at 273 Park Headquarters Road, Stoystown, Pennsylvania, 15563. The park was established to memorialize where United Airlines Flight 93 crashed with the loss of all on board.

The first features of the permanent memorial were dedicated on September 10, 2011. Work is ongoing to complete the final elements.

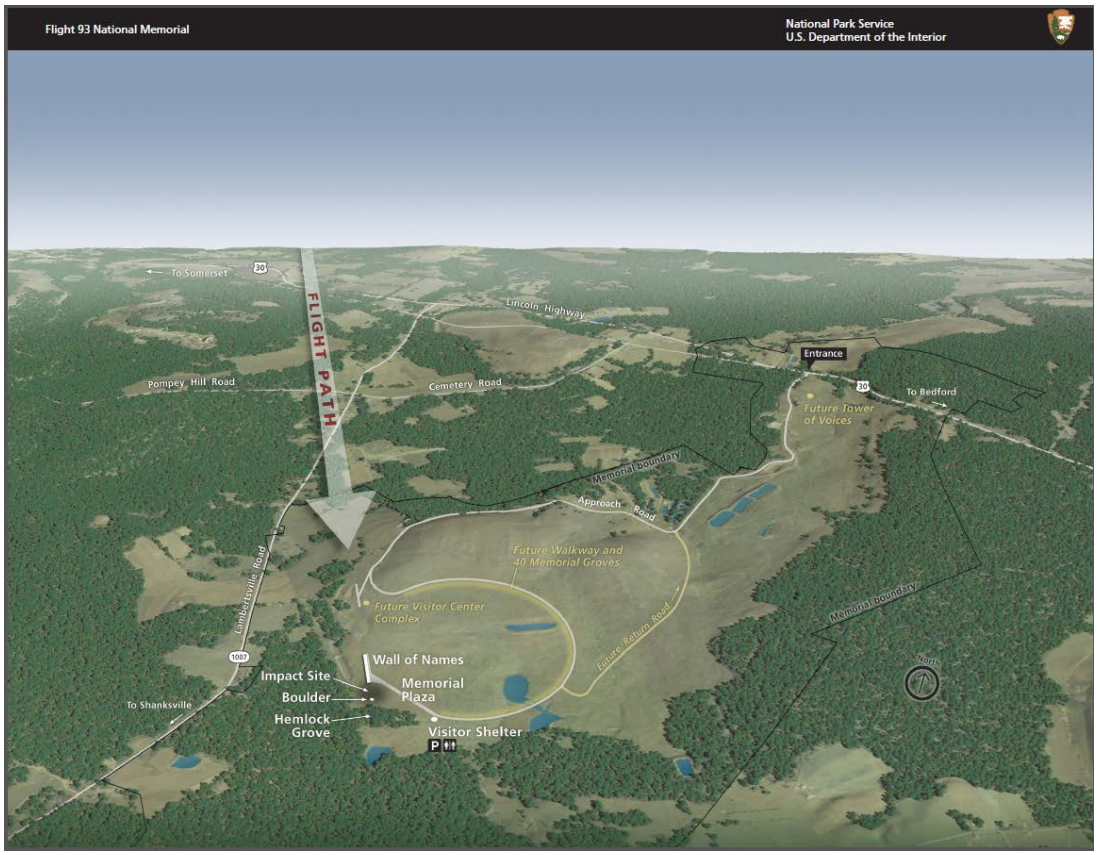

Figure 1 Flight 93 National Memorial Location Map

Legislation

On September 24, 2002, the *Flight 93 National Memorial Act,* (P.L. 107-226) was enacted by Congress and signed into law by President George W. Bush, which authorized *"a national memorial to commemorate the passengers and crew of Flight 93 who, on September 11, 2001, gave their lives thereby thwarting a planned attack on our Nation's Capital…".* The Act specifically designated the crash site of Flight 93, located in Stonycreek Township, Somerset County, Pennsylvania, as the site for this national memorial to honor the passengers and crew of Flight 93. The Act also formally designated this site a unit of the national park system, which automatically listed the site in the *National Register of Historic Places* (November 8, 2002).

Purpose of the Flight 93 National Memorial

The following statements represent the shared understandings of the purpose of the *Flight 93 National Memorial* -

- Honor the passengers and crew members of United Airlines Flight 93 who courageously gave their lives, thereby thwarting a planned attack on Washington, D.C.
- Allow the public to visit the site and express their feelings about the event and the passengers and crew of Flight 93.
- Respect the rural landscape and preserve the solemn and tranquil setting of the crash site of Flight 93.

The Significance of the Site

The events of September 11, 2001, and the dramatic story of Flight 93 are forever linked to the Pennsylvania field on which the crash occurred. The following statements summarize the significance of this site and explain why it was selected as the site of a national memorial:

- The crash site is the final resting place of the passengers and crew of Flight 93.
- The heroic actions of the passengers and crew of Flight 93 are part of the transformational events of the September 11, 2001, terrorist attacks on the United States.

Mission Statement

The preamble to the Mission Statement is:

"A common field one day.
A field of honor forever."

May all who visit this place remember the collective acts of courage and sacrifice of the passengers and crew, revere this hallowed ground as the final resting place of those heroes, and reflect on the power of individuals who choose to make a difference.

The *Mission* of the Flight 93 National Memorial is to -

1. honor the heroism, courage and enduring sacrifice of the passengers and crew of United Airlines Flight 93;
2. revere this hallowed ground as the final resting place of 40 heroes who sacrificed their lives so that others would be spared;
3. remember and commemorate the events of September 11, 2001;
4. celebrate the lives of the passengers and crew of Flight 93;
5. express the appreciation of a grateful nation forever changed by the events of September 11, 2001;
6. educate visitors about the context of the events of September 11, 2001; and
7. offer a place of comfort, hope and inspiration.

Overview of the Museum Collection

The Flight 93 National Memorial museum collection is comprised of objects of tribute left by visitors to the Temporary Memorial and the subsequent permanent memorial, and objects mailed or given directly to the community or the Memorial Planning Office since October 13, 2001. According to the park's 2014 Collection Management Report (CMR), the collection consists of 22, 708 items representing the disciplines of Archeology (6 items), History (20,494 items), and Art (2,208 items).

Additional items stored in the buildings that were consumed by fire were artifacts from the crash site and other significant items associated nationally with the events of September 11, 2001.

SEQUENCE OF EVENTS ASSOCIATED WITH THE ACCIDENT

Introduction

This narrative describes the sequence of events leading up to and following the Flight 93 National Memorial serious accident. Appendix A covers a detailed timeline of the events and Table 1 lists abbreviations commonly used in both the narrative and timeline.

Table 1. Abbreviations and Terms Used in this Report

Abbreviation or Term	Title or Role	Affiliation
AO ASST	Administrative Office Assistant	NPS Employee
FLNI CONT 1	Flight 93 National Memorial - Contractor	NPS Contractor
FLNI CONT 2	Flight 93 National Memorial - Contractor	NPS Contractor
FLNI PART	Friends of Flight 93 National Memorial - Partner	NPS Partner
FLNI VOL	Flight 93 National Memorial - Volunteer	NPS Volunteer
INTERP	Park Ranger Interpretation	NPS Employee
LE	Park Ranger Protection	NPS Employee
MAINT	Maintenance Mechanic	NPS Employee
NER MERT	Northeast Region Museum Emergency Response Team	NPS Employees
NPS-ISB ASAC	NPS Investigative Services Branch Assistant Special Agent-in-Charge	NPS Employee
NPS-ISB SA 1	NPS Investigative Services Branch Special Agent	NPS Employee
NPS-ISB SA 2	NPS Investigative Services Branch Special Agent	NPS Employee
PSP	Pennsylvania State Police	State of PA
SAIT	Serious Accident Investigation Team	NPS Employees
SUPT	Superintendent	NPS Employee
ACP	Automated Checklist Program	
CMP	Collection Management Plan	
CMR	Collection Management Report	
FLNI	Flight 93 National Memorial	
ICMS	Interior Collections Management System	
MCEOP	Museum Collections Emergency Operations Plan	
NFPA	National Fire Protection Association	
NMSC	Northeast Museum Services Center	
NPS	National Park Service	
PMIS	Project Management Information System	
SFMP	Structural Fire Management Plan	
SOCS	Scope of Collection Statement	
WEPA	Western Pennsylvania Parks	

Between 2010 and 2014

The administrative offices for FLNI were initially located off-site at 109 West Main Street, Somerset, PA. In 2010, four modular buildings were placed at FLNI that were utilized as administrative office space as well as storage for museum collections. The physical address is 273 Park Headquarters Road, Stoystown, PA 15563. The buildings are depicted above and oriented immediately west of the parking lot. The four modular trailer mounted buildings were sited in a close grouping for easy access between the buildings. Three of the buildings were placed in a "U" shape with the entrance/exit doors towards the inside of the "U". The buildings were arranged as follows:

- Building 1: Curatorial
- Building 2: Break room
- Building 3: Administrative
- Building 4: Conference/Office

Figure 2 Administrative and curatorial offices

The curatorial building was used as an office, processing space and museum storage to store accessioned and unaccessioned collections. The buildings were connected by an exterior deck platform constructed of a lumber substructure and a plasticized decking material provided by the National Park Foundation through a grant. The deck could be accessed by a handicap ramp and exterior stairs also constructed with a lumber substructure and the same plasticized decking material. Entrance into the buildings and egress from them required occupants to access the deck. *Otherwise stated egress to the public way*[1] *could only be gained by accessing the deck first.*

According to the Pennsylvania State Police (PSP) Fire Investigation Report/Worksheet, the building is described as being covered with wood siding and the roof being covered with conventional asphalt shingles. The trailer buildings were of Type V lightweight wood construction. FLNI employees were protected by a fire alarm but no fire sprinkler system was in place to protect buildings. Occupancy Type is a fire code term for describing how the building is used. In this case these buildings were considered Business Occupancy. Both the construction type and occupancy type are important for determining fire code compliance. In this case, with the exception of the plasticized lumber in the means of egress, these buildings appear to have complied with most fire code regulations.

[1] Public Way as defined by National Fire Protection Association (NFPA) is "A street, alley, or other similar parcel of land essentially open to the outside air deeded, dedicated, or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 ft (NFPA 1 2012 Edition *Fire Code* Section 3.3.209)

The deck material at this location was made of a plasticized lumber material manufactured by Tangent Technologies. In 2010, park staff applied a bed of hardwood mulch around the perimeter of the structures and a second application in April 2014. This bark surrounded the site and extended under the ramp and stairs. The buildings were on top of a hill with a gentle grade leading down to the main park access road. The hill is covered with light grass and other flashy vegetation that has the potential for burning rapidly. The area is known to have frequent high wind events. The landscaping around the building consisted of light ornamental grasses and other types of vegetation.

One of the modular buildings located on the west side of the complex was utilized as an office for the FLNI Curator, as well as storage and processing areas for museum collections. Since 2012, FLNI staff, in collaboration with design firm Gallagher and Associates have been engaged in designing exhibits for the visitor center at FLNI that is still under construction. The vast majority of the park's museum collection is located off-site at the Iron Mountain storage facility, located northwest of Pittsburgh in Boyers, PA. Each storage space at Iron Mountain contains a fire detection and fire suppression system. In July 2013, more than 3,000 artifacts were removed from Iron Mountain and relocated to Somerset, a location that was identified in the park's Collection Management Plan (CMP) as having multiple fire and security concerns and no fire suppression. In August 2013, artifacts selected for exhibit in the new visitor center were moved to the headquarters and stored in a building that had no fire suppression system.

As of December 8, 2015, the effort to identify recovered items and reconstruct the accession record has identified at least 8,310 objects and archival materials damaged or destroyed in the fire.

History Collection

- 203 objects selected for exhibit and rotation waiting for exhibit fabricators to visit in mid-October 2014. This number includes 184 accessioned.
- 17 waiting to be accessioned and 2 not to be accessioned. This is an exact count from an exhibit design spreadsheet.
- 1,416 accessioned tributes, waiting to be cataloged, collected on site from objects left at the wall, and then entered into the accessions book and into ICMS. This is an exact count based on accession records.
- 3,611 cataloged tributes (objects that were officially brought in to the FLNI collection as Federal property) located in 99 boxes. This is an exact number based upon catalog records.
- An estimated 300 airplane fragments contained in 1 box that had not yet been accessioned.

Archival Collection

- 330 photographs that had not been accessioned, on loan to the NPS from eight family members. This is an exact count based on inventory records.
- An estimated 2,200 hand written comment cards left at the memorial plaza by visitors.
- 250 original oral history interviews on audio cassette tapes. This is an exact count based on existing records.

Sequence of Events

Monday, September 29, 2014 - Thursday, October 2, 2014

During the week of Monday, September 29, 2014 through Friday, October 3, 2014, the maintenance staff at FLNI treated part of the deck interconnecting the headquarters buildings. This treatment was a two part process that involved applying a binder and then a slip-resistant finish to the surface of the deck. The deck was not treated on Thursday, October 2, due to adverse weather conditions. During this time frame, access to portions of the deck was blocked and as such, the building used for curatorial activity was inaccessible.

Friday, October 3, 2014

Weather

The weather on Friday, October 3, 2014, was overcast with a mean temperature of 63 degrees. The average sustained winds were out of the south/southwest with wind gusts up to 31 mph. At 3:12 PM, the temperature was 66 degrees, the humidity was 73%, and the winds were out of the southeast at 12 mph with gusts up to 25 mph. Weather reports for the thirty days leading up to October 3, 2014 were relatively dry with only 1.48 inches of precipitation recorded from the Quarry Trail Remote Automatic Weather Station (RAWS) which is located approximately three (3) miles from Stoystown, PA.

On Friday, October 3, 2014, National Park Service personnel at FLNI began arriving to work around 8:00 AM.

The first to arrive was the Administrative Office Assistant (Assistant 1). Assistant 1 arrived at 8:00 AM and unlocked the office. The remaining staff arrived between the hours of 8:00 AM and 10:30 AM. None of the employees reported seeing anything out of the ordinary when they arrived for work.

Assistant 1 reported taking a smoke break at approximately 9:00 AM. Assistant 1 retrieved cigarettes from her vehicle which is typically parked in the center of the parking lot near the median. Assistant 1 stated that she smoked a cigarette in that same general area. Assistant 1 finished the smoke break and returned to her office.

Between 8:00-9:00 AM, a maintenance employee (Worker 1) arrived at the headquarters complex to pick up the trash. Assistant 1 advised Worker 1 of a broken bracket that held the flag to the flagpole in front of headquarters complex. Worker 1 repaired the bracket and left the area of headquarters around 10:30 AM. Note: During interview(s) with Worker 1, he advised he is a smoker. Worker 1 stated that he only smokes in his personally owned vehicle, which he parks in the maintenance parking lot. Worker 1 also advised he spoke with a male visitor who drove up to the headquarters buildings for a couple of minutes and the visitor drove off towards the memorial plaza.

Between the hours of 12:00 and 1:00 PM, the staff at headquarters took their lunch breaks. Most of the employees took their lunch break in the lunch room, located in the east single-wide trailer at the headquarters complex. Due to the design of the complex, employees must walk outside from their office space to the lunch room, traversing the area where the fire would later be observed. Assistant 1 took her lunch break at the maintenance building with a fellow employee and returned to headquarters at approximately 1:00 PM. None of the employees noted anything out of the ordinary as they left the lunch room following their break.

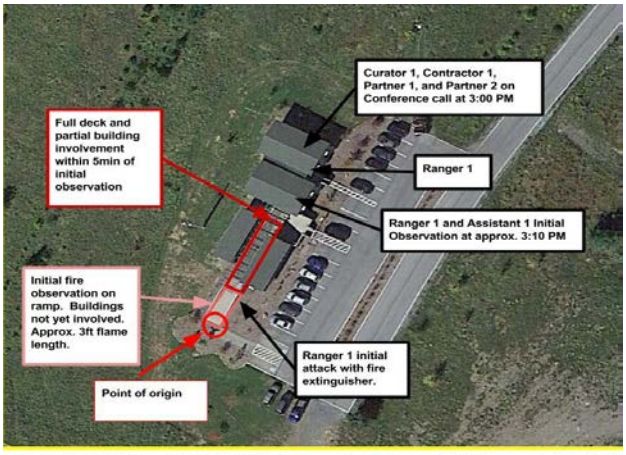

Figure 3 Flight 93 Headquarters and curatorial offices

Assistant 1 stated she took another smoke break between 2:00-3:00 PM, following the same pattern as before. She returned to her work station roughly fifteen minutes later having observed nothing out of the ordinary.

At approximately 3:00 PM, Assistant 1 and the Interpretive Park Ranger (Ranger 1) were at their respective work stations in the south double-wide portion of the headquarters complex while Curator 1, Partner 1, Contractor 1, and Partner 2 were in the conference room located in the north double-wide structure of the headquarters complex.

Assistant 1 stated that at approximately 3:00 PM she heard a noise outside similar to a jet passing over, but not as loud. She initially assumed the noise was related to contractors using construction equipment nearby. Shortly after hearing the noise, the Assistant thought she saw something she described as a mist pass by the window. She walked to the south facing exit and saw "orange" by the handicap access on the south end of the complex. Assistant 1 alerted her coworkers that there was a fire. Ranger 1, who works in the same building, went to retrieve a fire extinguisher to try to extinguish the blaze. Assistant 1 stated that the Ranger told her to retrieve another extinguisher, but she couldn't find one. At about that same time, the Assistant said she heard someone else yell, "Call 9-1-1!" Assistant 1 stated she left the building and moved her car. She called the superintendent, deputy superintendent, chief ranger, and facility manager.

Contractor 1 and Partner 2 were in the conference room in the north double-wide trailer participating on a conference call when they observed smoke out the window. Partner 1 estimated the time at roughly 3:05 PM, and Contractor 1 said she thought it was closer to 3:10 PM. The Museum Curator/Chief of Interpretation (Curator 1) stated she was utilizing the conference room as a temporary work space due to the deck treatment operation that maintenance was conducting. Curator 1 was in the conference room during the conference call that started at 3:00 PM. Approximately ten minutes into the call, or roughly 3:10 PM, one of her colleagues mentioned seeing smoke outside and she heard someone yell, "Fire!" She ran out the south entrance of the building and saw Ranger 1 attempting to fight the fire with an extinguisher. Curator 1 stated that when she first

observed the fire it was on the ramp but that it seemed to be spreading quickly toward the "collections structure" due to high winds.

Curator 1 stated she pulled the fire alarm box in the north building and called 9-1-1. She also notified the superintendent and the LE Ranger.

Note: According to Somerset County dispatch center records the first 9-1-1 call was received at 3:12 PM, the first units were dispatched at 3:13 PM.

After calling 9-1-1 and notifying the superintendent, employees began moving items from the north double-wide building and moving vehicles away from the buildings, until the fire moved into the structures and it became unsafe to do so.

Figure 4 Stoystown Volunteer Fire Department

Ranger 1 was unable to extinguish the fire due to how hot the fire was burning and the strong winds pushing the fire toward the structures. All employees evacuated the complex and waited for the fire department to arrive. The first fire apparatus responded at 3:17 PM and arrived on scene at 3:23 PM.

In all, ten fire department units responded to the scene, the last of which arrived at 3:56 PM. The contractors working on the new visitor center at FLNI observed the smoke and responded with construction equipment to assist. A grass fire started to spread away from the structure fire with the strong wind fanning the flames. The construction equipment was used to clear a fire line and stop the spread of the grass fire.

All fire units were cleared of the scene at 10:56 PM, but a rekindle was reported at 11:06 PM. Fire units were back on the scene by 11:23 PM and cleared again at 11:56 PM. During the efforts to fight the fire and prevent it from spreading into the northernmost building, heavy equipment was used in fire suppression efforts to prevent the flames from reaching the last building. Equipment was also used in the overhaul stages of the fire to reach hotspots buried in the debris to prevent another rekindle.

Figure 5 Fire progressing at Headquarters and curatorial offices

INVESTIGATIVE PROCESS

Serious Accident Investigation Team

On Sunday, October 5, 2014, the Serious Accident Investigation Team (SAIT) was finalized and directed to respond to Flight 93 National Memorial (FLNI) to begin the investigation. The SAIT is a national level team. The team members selected for the Flight 93 SAIT are as follows:

- James A. Loach, Team Leader
- Larry E. Johnson, Assistant Team Leader
- Donald C. Boucher, Chief Investigator
- Timothy E. Colyer, Lead Investigator
- Gregory T. Monahan, Lead Investigator
- Eric I. Allen, Safety Advisor
- Brian P. Johnson, Subject Matter Expert – Structural Fire
- Stephen M. Clark, Liaison to Northeast Regional Office
- Stephanie Stephens, Subject Matter Expert – Curatorial
- Mary A. Palensky, Writer/Editor

The following serves as a timeline of the events:

October 4, 2014, the Midwest Region SAIT responded.

October 6, 2014, the SAIT in-briefed.

October 7, 2014, the SAIT met with the FLNI Superintendent and FLNI Deputy Superintendent. They briefed the SAIT and responded to questions about details and on-going recovery, operations, and activities at the site.

October 6-10, 2014, SAIT members conducted interviews, gathered evidence, and began assembling documentation for the factual report, which would include a timeline, findings, and narrative.

October 9, 2014, the SAIT members conducted an out-briefing with the Northeast Regional Director and the FLNI Superintendent.

October 10, 2014, the SAIT members departed FLNI and returned to their home units.

October 21, 2014, the Chief Investigator submitted samples of the decking to the University of Maryland for analysis.

October 27, 2014, SAIT members conducted an interview with an employee that was unavailable during the week of October 6-10, 2014.

SAIT members communicated regularly to complete team requirements. Although the SAIT divided

up the primary reporting responsibilities, each member contributed to every section.

Interviews

The SAIT identified a number of NPS employees and park cooperators to be interviewed, the following of whom provided statements:

IN PERSON INTERVIEWS	
Title	**Organization**
FLNI Curator	NPS
FLNI Park Ranger Interpreter	NPS
FLNI Administrative Assistant	NPS
FLNI Contractor 1	Friends of FLNI
FLNI Contractor 2	Friends of FLNI
FLNI Maintenance Mechanic	NPS
FLNI Executive Director	Friends of FLNI
NE Museum Service Center Curator	NPS
NE Regional Curator and Director NE Museum Service Center	NPS
Senior Curator, NE Museum Service Center	NPS
PHONE INTERVIEWS	
Executive Assistant	Friends of FLNI
Associate Manager of Museum Conservation Services Harpers Ferry Center	NPS

FINDINGS

Findings are the conclusions of the Serious Accident Investigation Team based on the chronology of events and factual data, weight of evidence, professional knowledge, and good judgment. Each Finding is an essential step in the accident sequence, but each Finding is not necessarily the cause of the accident. Each Finding appears in bold print, with a narrative/explanation, followed by recommended action items to address each Finding.

Significant Findings

Finding 1: Director's Order 50D, *Smoking Policy* was not effectively implemented or enforced park-wide.

Director's Order 50D, *Smoking Policy,* 4.3.3 Site Managers. Ensure that (1) proper signage is installed where appropriate to regulate smoking, and (2) the rationale for designating areas where smoking is permitted or prohibited is added to the park/office compendium. While there was no obvious ignition source in this area, "a cigar/cigarette disposed of in the mulch bed could not be ruled out."[2] The team strongly suspects that the fire began when discarded smoking material caught the mulch on fire, and then progressed into the deck structure, deck, and the buildings.

Finding 2: The practice of applying mulch directly in contact with combustible building materials contributed to the rapid spread from the point of ignition.

National Fire Protection Association (NFPA) 1144, Standard for Reducing Structure Ignition Hazards from Wildland Fire, 2013 Edition describes the need to remove dead or downed fuels from at least 30 feet from a building in a Wildland Urban Interface (WUI) area[3]. In the case of these buildings, not only did the natural fuel material encroach into the 30 foot zone, but park staff added hardwood mulch as decorative landscaping that extended to the underside of some of the building's structure.

Finding 3: Plasticized lumber decking connecting the buildings was a major contributing factor to the speed and intensity of the fire progression and compromised egress from the buildings.

NFPA 101, Life *Safety Code* and most building codes identify the means of egress as a continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (1) the exit access, (2) the exit, and (3) the exit discharge. In this group of buildings the exit access was any point inside of the building(s) to the doors that discharged onto the deck. The doors themselves meet the definition of an exit. In order to get to the public way,

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[2] Pennsylvania State Police, Fire Investigation Report, October 25, 2014.

[3] NFPA 1144, Standard for Reducing Structure Ignition Hazards from Wildland Fire, 2013 Edition, 6.2.3 Dead and downed fuels within 30 ft (9 m) of all buildings shall be removed or treated to maintain the fuel modification area in conformance with the wildland fire mitigation plan, as approved by the AHJ.

occupants of these buildings were required to traverse an exit discharge made up of this plasticized lumber product.

NFPA 101, *Life Safety Code* requires that all parts of a means of egress conform to the general requirements of Chapter 7 *Means of Egress*. In the case of these buildings the exit discharge [4] is the portion of the means of egress that does not comply due to the extreme burning characteristics exhibited by the deck, ramp, and stairs. The *Life Safety Code Handbook* provides commentary on this stating that the principle addressed in having an exterior exit discharge that extends beyond the exit itself is so that a building's occupant can reach the public way without reducing the level of protection afforded by the rest of the means of egress system[5].

The product was provided through a grant process operated by the National Park Foundation from Tangent Technologies. While the exact product is not mentioned in the paperwork received from the park, all of Tangent's products are made from High Density Polyethylene (HDPE). For the purpose of this analysis, the Material Data Safety Sheet (MSDS) for the product known as Tandeck was used. HDPE is a polyethylene thermoplastic made from petroleum and is commonly used in plastic bottles. HDPE is known for its large strength to density ratio and is often used in plastic lumber applications.

Figure 6 Liquefied decking spreading fire under the building

The MSDS for Tandeck lists the melting point at 250° F. As a comparison, paraffin wax used in candle making has a melting point of around 150° F. This low melting point is why the product behaved more like a fuel fire then it did a fire in typical construction materials. Once the melting point was reached the product turned back into its liquid form. It took the addition of very little heat to bring the liquid petroleum to its flash point of 645° F. The flash point is the temperature at which the liquid begins to vaporize and form an ignitable mixture in air. When products reach their flash point they need the addition of a flame source to begin to burn. One of the properties that makes this HPDE product so volatile is that it not only has a flash point of 645° F, but an autoignition temperature of 645° F. An autoignition temperature is defined as the temperature at which a substance will spontaneously ignite without an external source. The analysis shows that once we apply enough heat to the product to produce a combustible mixture in air, there is enough heat for it to ignite without applying a flame. As a comparison the autoignition temperature of gasoline is around 500° F.

[4] Because some exits do not discharge directly into a public way, the exit discharge is defined as providing building occupants with a path of travel from the termination of an exit to a public way. This path of travel might be inside the building, as permitted by 7.7.2, or outside. Where an exit opens onto an alley, court, or yard, a safe path of travel is required to be provided to a public way or some equivalent safe area. This portion of the means of egress is the exit discharge.

[5] NFPA 101 Life Safety Code Handbook Section 7.7.1

The scientific data combined with what was learned from the fire at FLNI explains why this fire burned with such intensity. The wood substructure of the deck would quickly and easily produce enough heat to turn the HDPE into a pool of petroleum liquid. This liquid would quickly reach both its flash point and autoignition temperature creating a situation where the entire deck was quickly on fire and impinging on the lightweight wood construction of the buildings. This would be similar to what is known as area ignition in a wildland fire or flashover in a structure fire.

Finding 4: FLNI stored museum collections in buildings that were not designed for collections storage and did not have fire suppression systems.

- In July 2013, more than 3,000 artifacts were moved to Somerset, PA, a location having multiple fire and security concerns and no fire suppression system.
- In August 2013, artifacts selected for exhibit in the new visitor center were moved to the headquarters and stored in a building that had no fire suppression system.

DOI Museum Property Directive, Directive #4 Section 1.8, *Fire Protection Standards*, states that all buildings housing collections must be protected by fire suppression and fire detection systems.

- These buildings were constructed of lightweight construction materials which burned easily
- They were not sited on a permanent pad, thereby allowing fire to impinge on the building from the underside
- They had no fire suppression system

Finding 5: News releases inaccurately reported that loss to the collection was minimal, because items were stored in fire resistant cabinets.

The initial news release for the NPS inaccurately stated that only 10% of the archives and museum collection was stored in the damaged buildings and, "that much of it was kept in fire proof safes." This information was reported verbatim by multiple news sources including Fox, CBS, and CNN. Another NPS news release, dated October 24, 2014 noted that there was significant loss and, "in all, 334 original photographs and 25 recovered items and personal mementos of passengers and crew members of United Flight 93 were lost."

An estimate of items lost in the fire, provided by the park Curator shortly after the fire, included: 2 record storage boxes of plane parts; 30 record storage boxes of tribute items; 20 record storage boxes of comment cards and newspaper clippings; an undetermined number of photographs and items recently obtained from the families; and an undetermined number of items that represented the investigation and recovery efforts. As of December 8, 2015 the effort to identify recovered items and reconstruct the accession record, has identified at least 8,310 objects and archival materials damaged or destroyed in the fire.

According to the park's FY14 CMR, the park had no archives. The collection consisted of 22, 708 items representing the disciplines of Archeology (6 items), History (20,494 items) and Art (2,208 items). During the interview with the curator, it was verified that no museum collections were stored in the

fire proof cabinets, which is standard practice for museum collections. Standard procedure is to store accession records and the accession ledger (and in some instances small, highly valuable/irreplaceable objects) in a fireproof cabinet. Instead museum collections are to be stored in spaces that meet NPS standards for space, fire, and security. Even though FLNI reported on their ACP that they were meeting 82.4% of applicable standards at this facility, this self-assessment failed to account for the fact that the facility was a modular trailer that was not designed for collections storage and did not have a fire suppression system. In addition, it was also revealed in the interview that significant and irreplaceable items, both accessioned and unaccessioned, had been stored on-site since August 2013.

The October 24 news release noted exact numbers for photographs and recovered items and the park also provided the team with a list of items recovered from the fire that totaled 563 items in poor condition that represented both accessioned and unaccessioned material. These numbers do not add up to 10% of the collection, and realistically, since non-museum property was being stored with museum property the total number of objects lost or recovered for accountability purposes is impossible to quantify.

Other Findings of Significance

Finding 6: The Accession ledger, the legal record of collections ownership, was not properly stored in a UL listed fire resistant filing cabinet, and therefore was destroyed.

Figure 7 Filing cabinet recovered from FLNI HQs. Intact interior shows successful resistance to the effects of fire

The accession ledger is a legal document that identifies the source for every object in a park's museum collection. It contains the sequential log of transactions that prove NPS ownership of museum collections and temporary custody for incoming loans. All material in the park's museum collection must be part of an accession in the accession ledger. Legal custody of material is not completed until the information has been entered in the accession ledger. The accession ledger is one of the most important museum record-keeping documents for accountability and must be stored in a secure room inside a fire resistant file cabinet with a lock. Access to the accession ledger must be monitored and controlled. During the interview with the park curator it was revealed that the accession ledger was left on her desk and access to that space was inaccessible due to an ongoing deck staining project.

Finding 7: Failure to accession museum property in a timely manner made it impossible to account for what and how much was lost.

The Museum Act, NPS Management Policies 2006, Section 5.3.5.5.4 *Acquisition, Management, Disposition, and Use*, DOI Museum Property Directive 1 (2013) 1.12 *Components of Museum Collection Management*, and Director's Order 24, *NPS Museum Collections Management* require that all museum collections be properly documented, preserved, and accounted for. Ownership and temporary possession of artifacts are documented through the accessioning process. Accessioning establishes legal custody and ownership and provides information on how the NPS acquired the items. The NPS treats incoming loans as accessions. An incoming loan establishes custody, but not ownership.

Through discussions, interviews, and a review of the park's database it was discovered that there were several items not accessioned into the park's museum collection. Some unaccessioned items included a set of climbing harness and tree spikes used by an arborist from Pennsylvania State University during the 13 day investigation to recover plane parts, personal items, and human remains from trees and the badge that was recovered from the crash site identifying the Fish and Wildlife biologist as a federally trained law enforcement officer. These significant and irreplaceable items had been in the park's custody since September of 2012 but were not accessioned into the park's collection as a loan or gift. In addition, portions of the plane recovered from the crash site were also in the park's custody; however, they were not accessioned because the park was concerned that the airline might request them back. The oral history collection was started in 2005 and currently consists of over 800 interviews. The CMP notes that completed tapes, transcripts and interviewee files with accompanying methodology and a written report after the first year of the project will be transferred to the NPS curator for accessioning, cataloging, and archiving in the permanent collection. At the time of the fire, the oral histories had not been accessioned into the museum collection. Parks are required to accession museum property and incoming loans immediately upon receipt. Accessioning of objects should be given priority, especially items that are on loan to the park since these items are not owned by the NPS and pose a greater risk. All incoming loans are considered controlled property and are required to be inventoried on an annual basis.

Finding 8: Fire and security concerns at the Somerset facility, which were noted in the Collection Management Plan (CMP), had not been addressed.

A CMP is one of the primary planning documents for park museum collections. A CMP assesses a park's museum collection management program and provides guidance on issues such as storage, fire, and security protection.

The park's CMP, dated December 2006, was written prior to the delivery and set up of the buildings that burned so it does not address any specifics about that facility. The Security and Fire Protection chapter does however cover the facility at 109 W. Main Street, Somerset, PA. (Somerset facility). The plan identifies many of the security and fire protection concerns the SAIT team noted and provides some low cost recommendations on resolving some of the deficiencies. To date, none of these recommendations appear to have been implemented. For example, during the early stages of the SAIT investigation, the team noted there were combustible materials stacked around the furnace and electrical panels.

Finding 9: Trailer mounted buildings created a situation where the fire entered the building through the floor.

Temporary structures that are not placed on a permanent foundation provide park managers with a low cost, quick solution to meeting needs for employee office space and housing. However, these buildings are much more susceptible to fires originating from the outside of the building. Use of these buildings potentially endangers the occupants and the items that are stored inside.

Finding 10: The Structural Fire Management Plan (SFMP) was insufficient and was not consistent with the response reported in the Automated Checklist Program (ACP) for the headquarters facility.

Director's Order 58, *Structural Fire Management* requires each park to have a structural fire management plan. The region provided a draft copy of the Western Pennsylvania Structural Fire Management Plan (WEPA SFMP) which had not yet been signed by the superintendent. The SFMP did not follow the minimum standards which must incorporate the following:

1. Museum collections
2. Who is responsible to respond
3. Training of the responders
4. Supplying responders with pre-response documents

Director's Order 58, *Structural Fire Management* requires that where parks have buildings housing collections, local fire departments are made aware of the significance of the collections and the need to use less aggressive techniques when overhauling (overhaul is a tactic used by fire departments once the fire is mostly out to ensure that the fire is completely extinguished) the fire. Unfortunately, the fire was not completely extinguished the first time and the fire department had to respond again. A power shovel tractor was used to assist once the responding fire units were back on scene to ensure complete extinguishment. While the tactic was effective in ensuring the fire was completely extinguished, it contributed to making the origin and cause investigation very difficult, as well as complicated the recovery of artifacts.

In addition, the ACP stated that the SFMP adequately addressed the collections, when in actuality, the SFMP made no mention of collections. The Checklist for Preservation and Protection of Museum Collections is an important document that is submitted using the ACP within the Interior Collections Management System (ICMS), the mandatory computer program that is used for all museum collection data management in the DOI.

The NPS standards, or basic requirements, for managing museum collections are represented by each question in the Checklist. Each unit is required to conduct this self-assessment in order to track how effectively a unit is preserving and protecting the museum collections in its custody. The checklist also documents the preservation of the museum collections at a particular point in time. According to

the park's ACP, Facility 3 was identified as the Headquarters Collections Processing and Storage Facility located in Stoystown, PA. Section F requires the park to certify that they are following various fire protection procedures and policy. Question 5 in this section asks if the special needs of the museum objects and records are incorporated in the unit's structural fire plan.

The superintendent answered "Yes." However, the draft SFMP does not mention collections anywhere in the document.

Finding 11: No Museum Collections Emergency Operations Plan (MCEOP) existed for FLNI.

Departmental Manual 411, Chapter 12, Museum *Property Emergency Planning* states that, "each unit must have an Emergency Management Plan for museum property that is part of the unit's overall emergency plan. If the unit does not have a unit-wide Museum Collections Emergency Operations Plan, then the Emergency Management Plan for museum property may be written as a stand-alone document. Chapter 5, *Cultural Resource Management* and Chapter 8, *Use of the Parks* in NPS Management Policies state that emergency operation plans will address the protection or rescue of cultural resources in the case of an emergency or disaster and directs the NPS to develop a program of emergency preparedness.

The primary purpose of an emergency operations plan is to provide guidance for carrying out the actions that will ensure the safety of human life and minimal loss of museum property in the event of a natural disaster or other event leading to the existence of an emergency situation. A major component of an emergency operation plan is a risk assessment that provides assistance in making decisions about locations and preventive measures. Another component of the emergency operation plan is to identify and prioritize the museum property assets. Additional information can be found in the Museum Handbook, Part 1, Chapter 10, *Emergency Planning*.

Among the items stored at the headquarters location during the time of the fire were some of the most significant items recovered from the original crash. Having a list of high priority items that needed to be recovered could have assisted the Museum Emergency Response Team (MERT) in their salvage efforts.

Finding 12: The Scope of Collection Statement (SOCS) needs to be revised and updated.

A SOCS is a stand-alone document that states the significance of the museum collection and sets limits on collecting based on the park's purpose and interpretative themes as enunciated in legislation, other mandates, and park specific planning documents. Preparation of a SOCS is required by NPS Management Policies (2006, Chapter 5), Director's Order 24, *Museum Collections Management* and Director's Order 28, *Cultural Resource Management*. Each NPS unit with museum collections must maintain an approved and current SOCS. In FY2010, bureaus were required to identify the status of the SOCS for each bureau collection unit in response to Office of Inspector General (OIG) audit recommendation 4 *Ensure that the Scope of Collection Statement* of every site is reviewed and updated at least every 5 years, as required by Departmental Manual 411. The current SOCS for FLNI is dated August 10, 2007 and needs to be updated and revised.

A review of the park's SOCS states that only historic material that has a direct association with the park is included in the museum collection. When a large quantity of an object type is available, priority is given to acquiring the best-preserved examples. This appears to not be the case since multiple examples of redundant items have been accessioned. The SOCS also discusses what other types of material, such as archives and oral histories, should be incorporated into the park's collection. However, the 2014 CMR had an archival count of zero and none of the park's approximately 800 oral history interviews had been accessioned into the collection.

The SOCS also includes Appendix A, *Policy and Procedure for Field Collection Tributes*, and states "All objects culled from the collection before accessioning will be counted, documented and in some cases photographed." The disposition of things such as flowers and wreaths are "discarded when they begin to deteriorate." During the interviews and in reviewing what was recovered and salvaged from the fire, it was revealed that the park was not following its own SOCS. A tremendous amount of time and effort was being used to document items that will not be retained and the disposition of these items not selected for inclusion into the museum collection was not occurring.

SERVICEWIDE IMPLICATIONS

During the course of this investigation the team has identified findings that can help FLNI to improve their fire prevention and collections management programs but has also identified findings with Servicewide implications. Many of these Servicewide findings come from facts uncovered at FLNI and from team members' knowledge of NPS policies and procedures. The team publishes the following in hopes that other sites do not suffer the same fate as FLNI.

- Onsite FLNI curatorial sites are not meeting the requirements for museum collections management as identified in the Office of Inspector General Report No. C-IN-MOA-0010-2008, December 2009
- Ensure standards for museum storage are met and taken into consideration in the Servicewide storage strategy
- Ensure that NPS museum policies are enforced
- Ensure superintendents are held accountable for managing collections according to standards
- Assure that museum CORE documents (SOCS, CMP, museum collection Fire and Security Survey, MCEOP, housekeeping plan) are current, appropriate, realistic, and followed
- Ensure the Servicewide backlog of accessioning and cataloging is thoroughly reviewed and investigated
- Elevate museum collections management in the A123 process to ensure verifiable Servicewide controls exist
- Determinations must be made to identify where plasticized wood decking should be removed from existing buildings
- Ensure proper guidelines exist for use of plasticized lumber in new projects
- Mulch and other combustibles close to buildings need to be removed to develop clearances and defensible spaces
- A determination must be made where trailer mounted buildings should be placed on a pad

Figure 8 Flight 93 staff at post fire flag raising ceremony

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Northeast Museum Services Center, U.S. Department of the Interior, National Park Service. (2006). *Flight 93 National Memorial Collection Management Plan*

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National Fire Protection Association.

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U.S. Department of the Interior, National Park Service. *Museum Property Directive #4: Required Standards for Managing and Preserving Museum Property.*

U.S. Department of the Interior, National Park Service. *Director's Order #58: Structural Fire Management.* Washington, DC.

U.S. Department of the Interior, National Park Service. *Reference Manual 58: Structural Fire Management*

APPENDIX A. TIMELINE

Sources: Witness statements and Somerset County Dispatch report

Friday, October 3, 2014

3:10 PM – Fire observed by NPS Administrative Assistant

3:11 PM – NPS Interpretation Park Ranger initiates attack with fire extinguishers

3:12 PM – 9-1-1 receives first of four calls

3:12 PM – Employees remove items from northern most building until smoke and fire progression made further action untenable

3:13 PM – First responding unit dispatched

3:17 PM – First responding unit enroute

3:23 PM – First responding unit arrives on scene

3:56 PM – Last of 10 responding fire units arrive on scene

10:26 PM – All fire units clear from scene

11:06 PM – Rekindle report received

11:08 PM – Fire units dispatched

11:12 PM – Fire units enroute

11:23 PM – Fire units arrive on scene

11:56 PM – All units clear from scene

Saturday, October 4, 2014

Pennsylvania State Police (PSP) Fire Marshal arrives on scene.

Northeast Region Museum Emergency Response Team (MERT) arrives on scene to begin collection damage assessment and recovery.

Northeast Region Chief Ranger arrives on scene.
Northeast Region Curator arrives on scene.

Sunday, October 5, 2014

Serious Accident Investigation Team (SAIT) begins arriving in park.

Tuesday, October 7, 2014

SAIT on scene to begin investigation.

Friday, October 10, 2014

SAIT departs.

APPENDIX B. SCIENTIFIC DATA ON DECKING MATERIAL

ASTM E1354, ASTM E1321 and MCC tests

FireTEC Laboratory
Report #15-105,

Prepared for

Don Boucher
DOI-NPS National Capital Regional Office

by
Olga Zeller, Engineering Technician,

Dr. Andre Marshall
Associate Professor and Director
UM Fire Testing and Evaluation Center (FireTEC)

Department of Fire Protection Engineering
University of Maryland
College Park, Maryland 20742 USA

January 14, 2015

A. JAMES CLARK
SCHOOL OF ENGINEERING

ASTM E1354 TEST

CONE HEAT RELEASE SUMMARY SHEET

DATE: 1/5/2014

MATERIAL: **Recycled Deck Material**

NOTES:

Test	QE (kW/m^2)	TTI (s)	TB (s)	MI (g)	MF (g)	SML (g)	PHRR (kW/m^2)				AHRR (kW/m^2)				THR (MJ/m^2)	EHC (MJ/kg)
							60	120	180	OVL	60	120	180	OVL		
1	50	27	780	115.1	7.2	107.9	679	892	995	1010	467	625	700	592	461.9	42.8
2	50	24	736	113.8	6.5	107.3	625	822	1011	1011	412	561	671	621	457.05	42.6
3	50	20	734	108.8	5.4	103.4	535	824	924	997	363	521	614	596	437.18	42.3
4																
5																
6																
7																
8																
9																

TTI - Time to ignition (s)

TB - Burning Time (s)

MI - Initial Mass of Sample (g)

MF - Final Mass of Sample(g)

SML - Sample Mass Loss (g)

PHRR - Peak Heat Released Rate (kW/m2)

AHRR - Average Heat Released Rate (kW/m2)

THR - Total heat Released (MJ/m2)

EHC - Enthalpy of heat Combustion (MJ/kg)

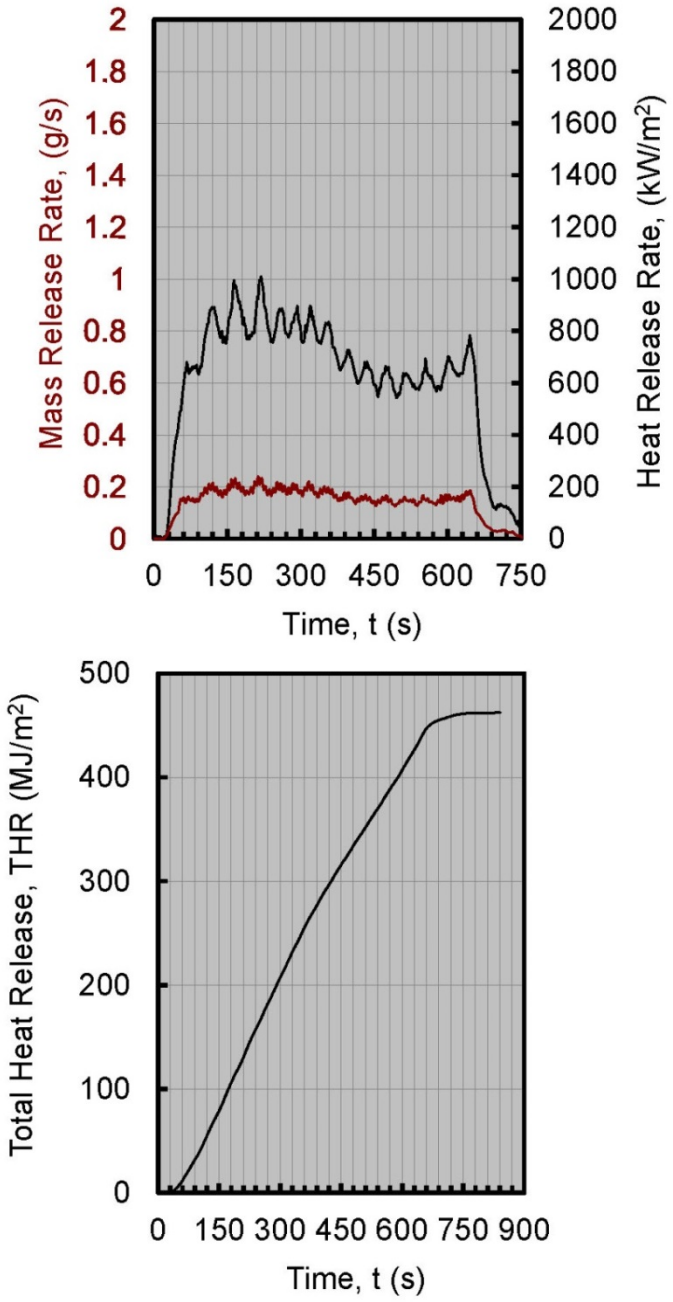
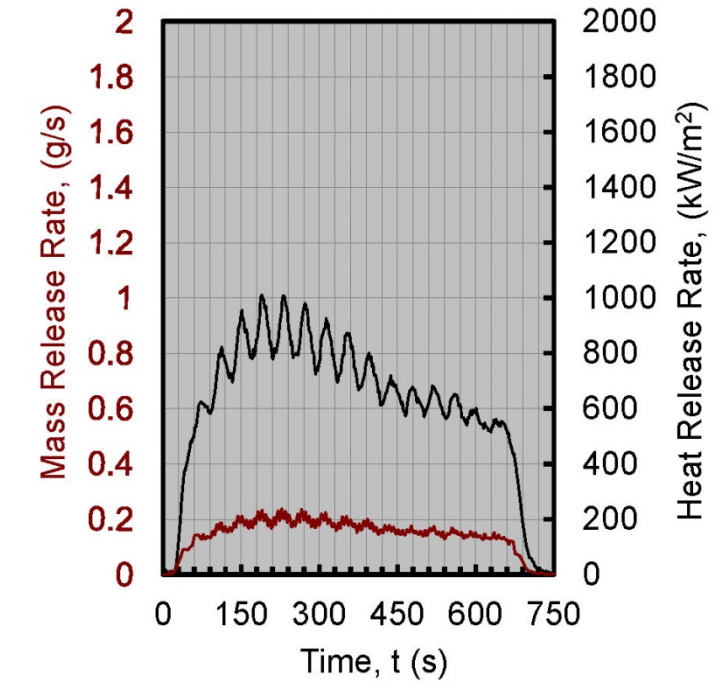


Figure 1: Test1 HRR, MLR and THR Graphs



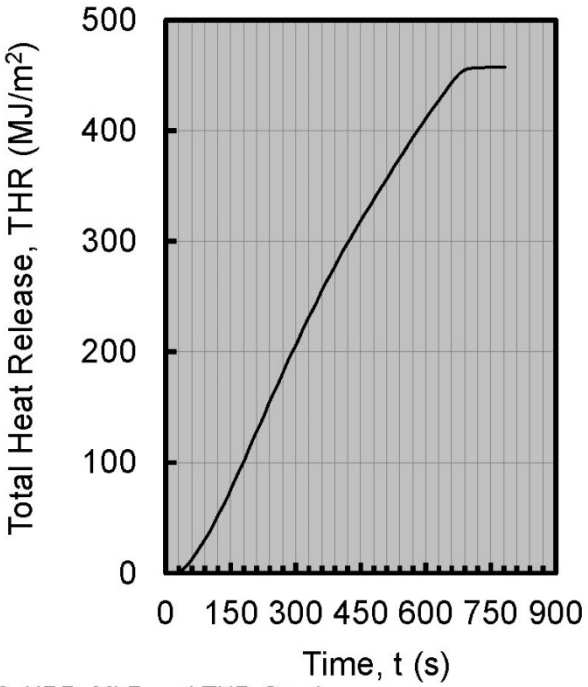
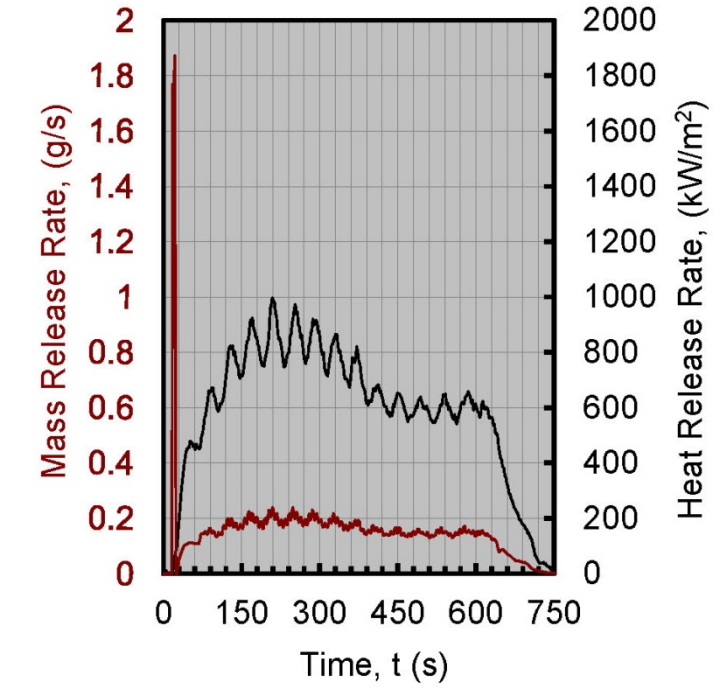


Figure 2: Test2 HRR, MLR and THR Graphs



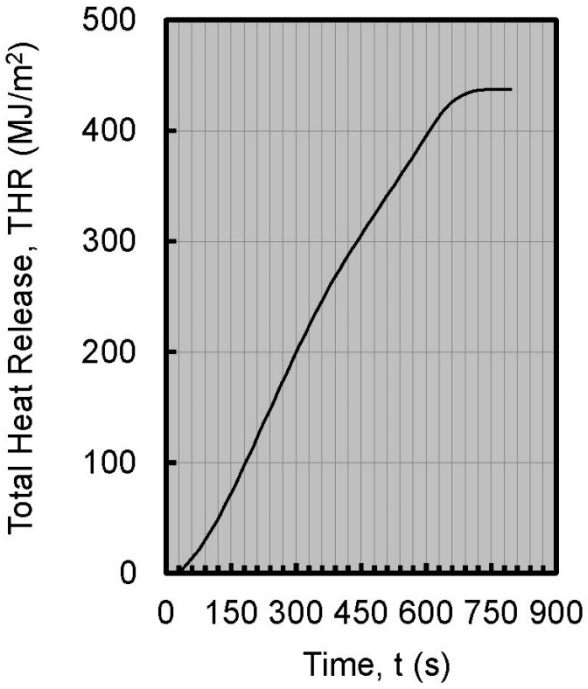


Figure 3: Test3 HRR, MLR and THR Graphs

ASTM E1321 (Ignition Test)

IGNITION SUMMARY SHEET

DATE: **01/14/15**

MATERIAL: **Recycled Deck Material**

NOTES: No ignition was observed after 20 minutes with an incident heat flux of 17.5 kW/m^2.
Minimum Ignition Heat Flux = 19 kW/m^2 .

q''_{crit}: **19** kW/m^2

Test #	q''_{ext} (kW/m^2)	t_{ign} (s)
1	25	291
2	20	834
3	15	NO IGN
4	17.5	NO IGN

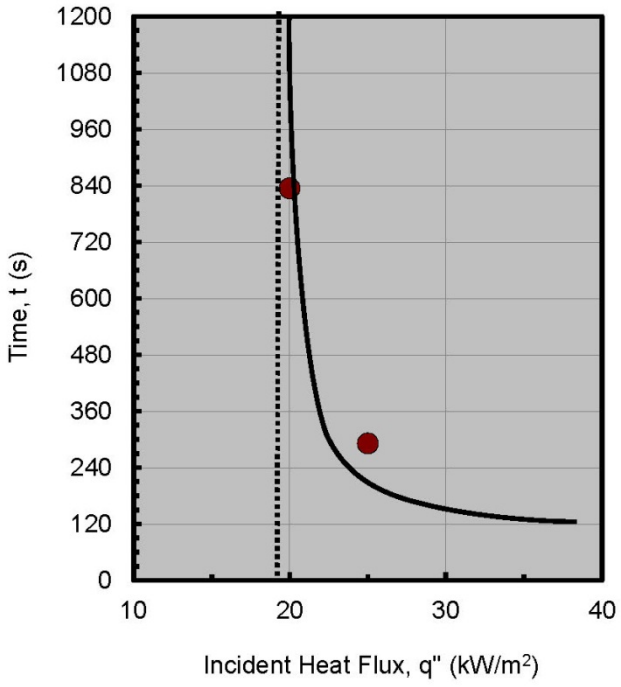


Figure 1: Ignition Time vs. Incident Heat Flux

Test #	q''_{crit}/q''_{ext}	$t^{1/2}$ ($s^{1/2}$)
1	0.76	17.06
2	0.95	28.88
3	0.00	0.00
4		

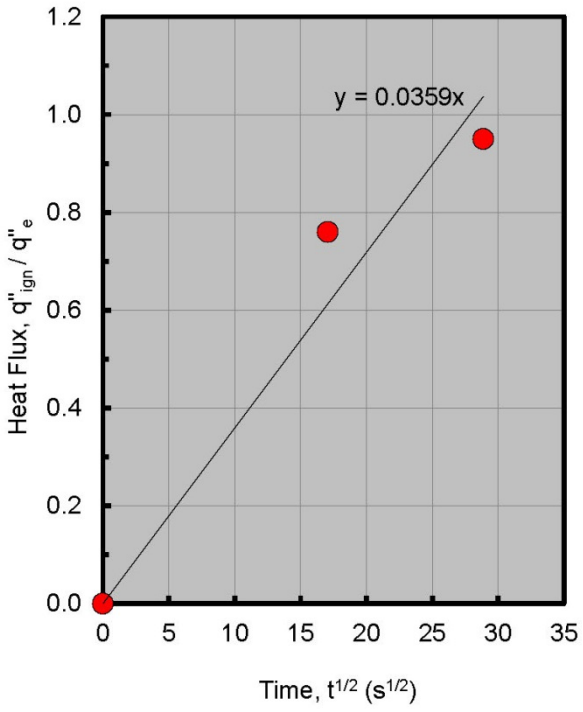


Figure 2: Ratio q''_{ign}/q''_{e} vs Time $t^{1/2}$

MICROSCALE COMBUSTION CALORIMETER TEST

Client:	NPS	Heating Rate:	1 K/s
Operators:	Xi Ding	Combusor Temp.:	900 °C
Test Dates:	Dec.19th, 2014	N2 flow rate:	80 cc/min
Project No.		O2 flow rate:	20 cc/min
Material ID*:	Recycled Deck Material	Color:	
Description*:		Thickness:	
		Note:	

*Information/instruction provided by the Client

RESULTS

Test No.	Sample Mass(mg)	Char Yld. (%)	THR(kJ/g)	Peak HRR (W/g)	Peak Temp. (°C)
1	2.832	3.955	40.1	1109	504.5
2	2.263	0.574	38.9	1175	506.7
3	2.559	5.119	39.4	1191	507
Average	2.6	3.2	39.5	1158.3	506.1

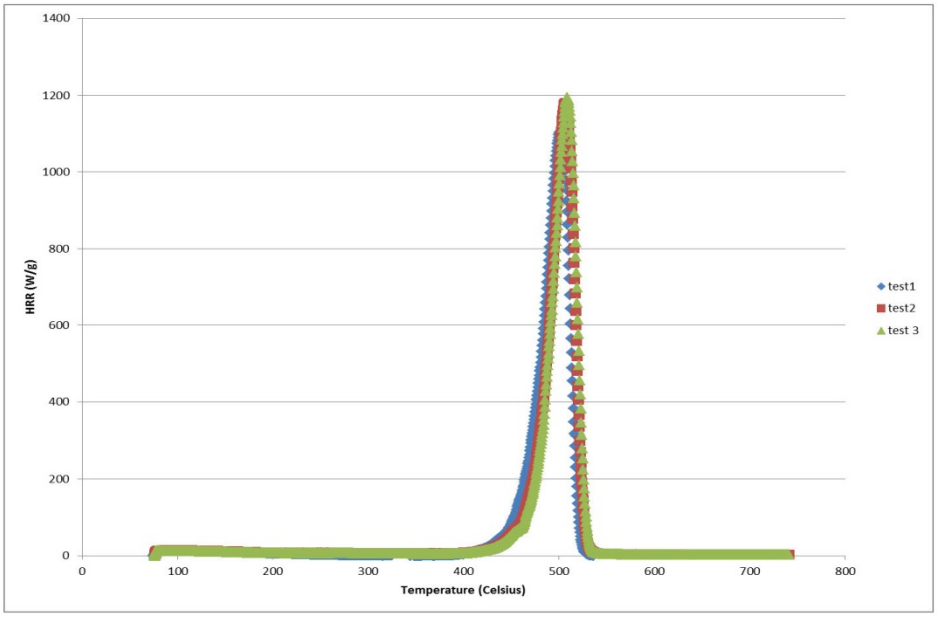


Figure 1: HRR vs Temperature of sample.

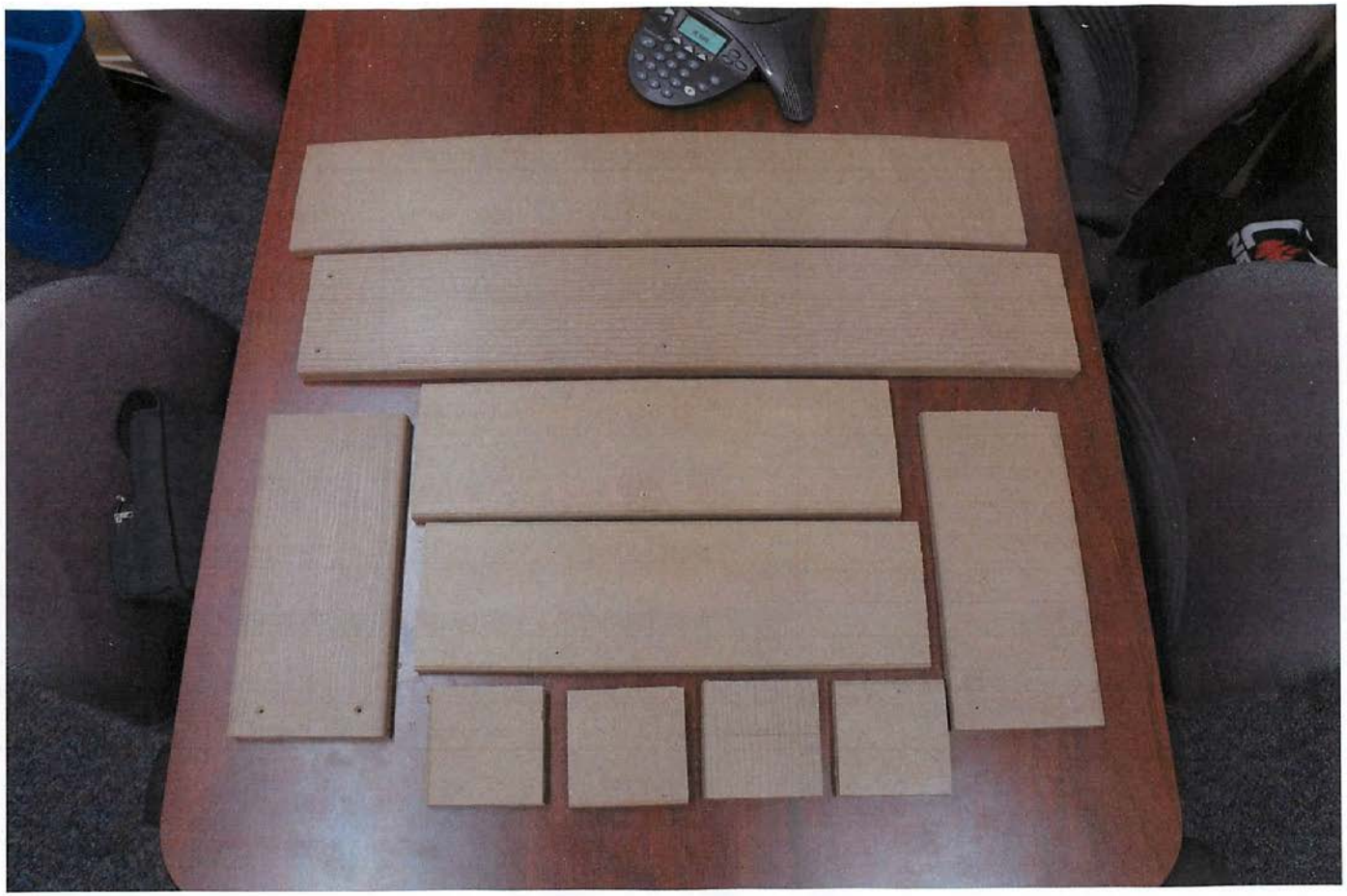
CHAIN-OF-CUSTODY LOG
EVIDENCE TRANSFERRED FOR TESTING TO
UNIVERSITY OF MARYLAND
FIRE TESTING AND EVALUATION CENTER (FIRETEC)

(For Non-Photographic Evidence)

Incident Identification: **FLNI Fire SAI**

Evidence Custodian: **D. Boucher**

Description of Item	Evidence ID #	Name of Person Logging Item Out	Name & Signature of Person Receiving Item	Date Item Received
10x10x1.5cm sample of decking material	FLNI-001(A)	Don Boucher	OLGA ZELLER	12/08/14
10x10x1.5cm sample of decking material	FLNI-001(B)	Don Boucher		
10x10x1.5cm sample of decking material	FLNI-001(C)	Don Boucher		
10x10x1.5cm sample of decking material	FLNI-001(D)	Don Boucher		
14x80x1.5cm sample of decking material	FLNI-002(A)	Don Boucher		
14x80x1.5cm sample of decking material	FLNI-002(B)	Don Boucher		
14x46x1.5cm sample of decking material	FLNI-003(A)	Don Boucher		
14x46x1.5cm sample of decking material	FLNI-003(B)	Don Boucher		
14x31x1.5cm sample of decking material	FLNI-003(C)	Don Boucher		
14x31x1.5cm sample of decking material	FLNI-003(D)	Don Boucher		



TANDECK™ MATERIAL SAFETY DATA SHEET

Section 1: Product Identification and Emergency Information

Product Description
Foamed, colored polyolefin material "TanDeck" reinforced & semi-reinforced extruded products

Chemical Description
HDPE (High Density Polyethylene) with (less than 4%) colorant and foaming agents in base HDPE resin.
≤ 30% of overall total weight is fibrous glass,
< 2.5% by wt of organic surface binder.

Supplier
Tangent Technologies

MSDS Number
None

Address
1001 Sullivan Road
Aurora, Illinois 60506

CAS Number

Phone Number
(630) 264-1110 Tangent Technologies LLC
(800) 424-9300 Chemtrec

Date Revised
08/27/14

Section 2: Material Identification and Information

Non-Hazardous Ingredients
HDPE (High Density Polyethylene) with (less than 4%) colorant and foaming agents

Hazardous Ingredients
≤ 30% of overall total weight is fibrous glass with < 2.5% of organic surface binder.
Note: Fiberglass may cause mechanical irritation to the skin, eye and upper respiratory tract.

Section 3: Physical and Chemical Characteristics

Appearance
Non-Translucent, Colored Extruded product

Odor
Slight

Boiling Point
N/A

Melting Point
250° F 121 °C

Vapor Pressure (mm HG)
N/A

Specific Gravity (H2O = 1), (g/cc)
0.65 – 0.88

Solubility in Water
Negligible

Evaporative Rate
Negligible

Vapor Density (air = 1)
N/A

Evaporation Point
N/A

Section 4: Fire and Explosion Hazard Data

Flash Point
645° F 340°C
Fiberglass component will not support combustion

Auto-Ignition Temperature
645° F 340°C

Flammable Limits (LEL)
N/A

Flammable Limits (UEL)
N/A

Extinguishing Media
Carbon dioxide, foam, dry chemical and water spray

Special Fire Fighting Instructions
Use self-contained breathing apparatus.
Use standard chemical fire fighting procedures.

Unusual fire and explosion hazards
Exposure to fire can generate toxic fumes.
High dust levels may create potential for explosion

NFPA Hazard ID
Health: 1, Flammability: 1, Reactivity: 0

TANGENT

Tangent Technologies LLC
1001 Sullivan Road
Aurora, Illinois 60506-1065
tel 630.264.1110
fax 630.264.6881
www.tangentusa.com

Date: 08/27/14

TANDECK™ MATERIAL SAFETY DATA SHEET

Section 5: Reactivity Hazard Data

Stability
Stable

Conditions to Avoid
Extreme Heat

Incompatibility (Materials to Avoid)
Strong Oxidizers

Hazardous Decomposition Products
Carbon Monoxide, Aldehydes, Acetic Acid

Section 6: Health Hazard Data

Primary Routes of Entry
Inhalation or ingestion of dust

Health Hazards
Dust may cause irritation of mouth, nose, throat, and eyes

Medical conditions aggravated by exposure
Some long-term breathing conditions can be aggravated by exposure to dust from this product

Emergency First Aid Procedures
Seek medical assistance for further treatment, observation, and support if necessary

Eye Contact
Do not rub eyes. Remove contact lenses
Pour gentle stream of warm water through affected area.
Contact physician if further treatment is necessary.

Skin Contact
Run a gentle stream of water over irritated area for 15 minutes. Mild soap may be used.
Contact physician if further treatment is necessary

Inhalation
Move person to fresh air, seek medical attention
If symptomatic contact physician if further treatment is necessary.

Ingestion
Seek medical attention

Section 7: Precautions for safe handling and use

In case of spills or accidental release
Waste material must be disposed of in accordance with applicable federal, state, and local environmental control regulations. Use vacuuming or wet sweeping methods instead of dry sweeping.

Waste disposal methods
Material should be disposed of through an approved maste management facility

Precautions to be taken in handling and storage
Store at less than 120° F 49°C

Other Precautions and/or Special Hazards
Store away from heat or open flame. Store away from strong oxidants or alkalis. Store flat and supported across entire span. Use gloves to protect against physical irritation or injury if required by handling and fabricating ☒ conditions. Use standard safety glasses with side shields when handling or fabrication the product. Application of ☒ this product generates dust, use an appropriate NIOSH-approved particulate filter respirator.

Section 8: Control and protective measures

Respiratory Protection
None, unless machining material.
A properly fitting NIOSH approved dust mask must be worn when machining this material

Ventilation
Machine this product only in well ventilated area, dust collection systems are recommended

Protective Gloves
Use gloves to protect against physical irritation or injury if required by handling and fabricating conditions

Eye Protection
Wear safety glasses with side shields when nailing, cutting, or machining this product

Other Protective Clothing and Equipment
Wear clean body covering clothing.

Hygienic Work Practices
Wash hands before eating, drinking, or smoking

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Date: 06/27/14

APPENDIX C. SAFETY ALERT

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, DC 20240

IN REPLY REFER TO:
2400

APR 14 2015

Memorandum

To: Regional Directors
(Attn: Superintendents)

From: Associate Director (A), Visitor and Resource Protection
Associate Director (A), Park Planning, Facilities, and Lands

Subject: Safety Alert – Rapid Combustion of Plasticized Lumber

On the afternoon of Friday, October 3, 2014, a fire occurred at Flight 93 National Memorial (FLNI). Three of four mobile buildings in the headquarters complex were completely destroyed. The remaining building, utilized as office space, was severely damaged. Plasticized lumber decking connecting the buildings was a major contributing factor to the speed and intensity of the fire. Because plastic decking was used to construct the walkways and stairs between the buildings, the emergency exits were also affected.

The plasticized lumber decking used at FLNI was primarily composed of *high-density polyethylene (HDPE)* plastic. HDPE-based and other composite building materials have become increasingly popular in recent years and are in wide use throughout the National Park Service. These products are environmentally preferable because they are composed of recycled plastic and other materials. When used appropriately, HDPE-based decking is a highly durable, cost-effective and safe product. However, as the investigation into the fire at FLNI demonstrates, HDPE materials can also pose unique hazards that must be taken into account during construction planning. Specifically, when heated, the solid plastic quickly melts, transforming into a liquid. The liquefied plastic supports rapid flame spread and generates dense, thick smoke. Once ignited, HDPE-based lumber/decking does not behave like traditional building materials, and presents unique challenges to responding firefighters.

The serious accident investigation at FLNI is ongoing, and additional details regarding the incident will be released in the future. However, the following actions should be taken as soon as practicable:

- Provide the attached Safety Alert to all parks.
- Each park/facility should inspect all areas where HDPE-based decking materials are currently installed to identify locations where these materials are:

    1. Located within the interior of a building or structure
    2. Located near heat sources likely to exceed 250F degrees (e.g., welding/cutting operations, gas/charcoal grills, fire pits, etc.), and/or

3. Located so that HDPE-based materials comprise the primary exit route(s) from a building/structure.

- For any HDPE-based materials found in the above locations, the park/facility must evaluate potential risks and take corrective action. Corrective actions may include relocation/removal of heat sources, removal of HPDE-based materials, modification of occupant emergency (evacuation) plans, and/or employee notification.
- For any HPDE-based decking installed inside a building, the park/facility must notify their Regional Structural Fire Manager to determine the appropriate corrective action(s).
- Parks with engine companies should review their response procedures for locations where HPDE-based decking materials are present. Additionally, parks that utilize local emergency services, should inform their local fire department if HDPE-based materials may be present in or near buildings.

The Structural Fire Program, Office of Risk Management, and Park Facility Management Division will continue to work with investigators, the Northeast Region, and FLNI staff to determine additional actions that may be identified. Please direct any questions regarding this alert to your regional Structural Fire Program Manager or CDR Michael Quinn, National Park Service Occupational Safety and Health Program Manager, at Michael_M_Quinn@nps.gov or (202) 513-7214.

cc: Associate Directors
Deputy Regional Directors
Associate Regional Directors, Operations
Chief, Fire and Aviation Management
Chief, Park Facility Management
Chief, Office of Risk Management
Regional Chief Rangers
Regional Safety Managers
Regional Structural Fire Managers

SAFETY ALERT

Date: April 14, 2015

Subject: Rapid Combustion of Plasticized Lumber

Issue: On the afternoon of Friday, October 3, 2014, a fire occurred at Flight 93 National Memorial (FLNI) park headquarters. Three of the four mobile buildings used as the headquarters complex were completely destroyed. The remaining building, utilized as office space, was severely damaged. Plasticized lumber decking connecting the buildings was a major contributing factor to the speed and intensity of the fire. Because plastic decking was used to construct the walkways and stairs between the buildings, the emergency exits were also affected.

The plasticized lumber decking used at FLNI was primarily composed of **high-density polyethylene (HDPE)** plastic. This type of material is sold under several trade names and is available from a variety of manufacturers. HDPE-based building materials have a relatively low melting point, typically close to 250F degrees. Once ignited, the solid plastic quickly liquefies allowing it to spread rapidly. Unlike traditional building materials, the melted plastic behaves like a flammable liquid, burning rapidly and generating heavy smoke.

Action: Upon receipt of this alert, the following actions are directed:

- Each NPS Region must provide a copy of this Safety Alert to all operating units.

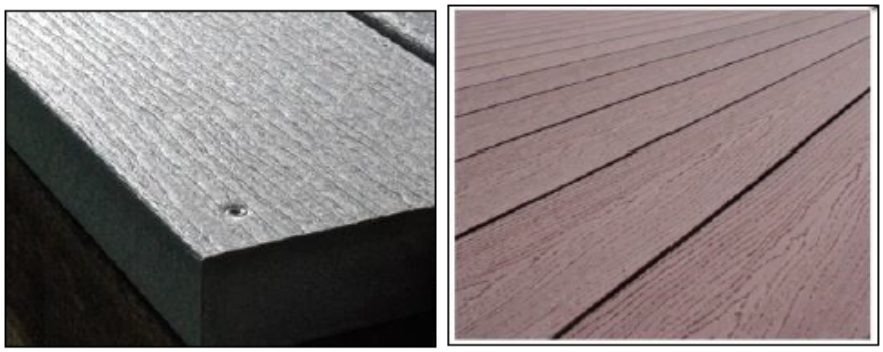
- Each park/facility will inspect all areas where HDPE-based decking materials are currently installed to identify locations where these materials are:
    1. Located within the interior of a building or structure
    2. Located near heat sources likely to exceed 250F (e.g., welding/cutting operations, gas/charcoal grills, fire pits, etc.), and/or
    3. Located so that HDPE-based materials comprise the primary exit route(s) from a building/structure.

  Special emphasis should be placed on housing, dormitories, and other areas where personnel sleep and other areas where delayed response can be expected.

- If HDPE-based materials are found in any of the above locations, the park/facility must evaluate potential risks and take corrective action. Corrective actions may include relocation/removal of heat sources, removal of HPDE-based materials, modification of occupant emergency (evacuation) plans, and/or employee notification.

- For any HPDE-based decking installed inside a building, the park/facility must notify their Regional Structural Fire Manager to determine appropriate corrective actions.

- Parks with engine companies should review their response procedures for locations where HPDE-based decking materials are present. Additionally, parks that utilize local emergency services, should inform their local fire department if HDPE-based materials may be present in or near buildings.

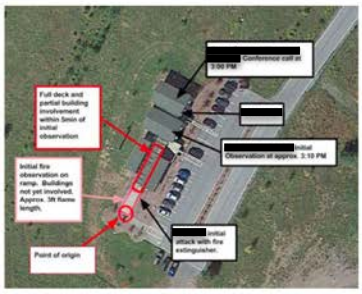


Examples of HPDE-based decking materials.

NPS is in the process of ensuring guidelines exist for use of plasticized lumber in new projects. Additional guidance/policy will be provided when available.

Additional Information: Please direct any questions regarding this alert to Brian Johnson, Structural Fire Program, (Brian_Johnson@nps.gov / 208-387-5497) or CDR Michael Quinn, Office of Risk Management (Michael_M_Quinn@nps.gov / 202-513-7214).

APPENDIX D. SAI PHOTO LOG



Overview, 20150112, , , ,

HScully photo 1, 20141003, HScully, 40° 4'2" N 78°53'15" W, West,

HScully photo 3, 20141003, HScully, 40° 4'2" N 78°53'15" W, West,

HScully photo 2, 20141003, HScully, 40° 4'2" N 78°53'14" W, North,

DGlessnerphoto3, 20141003, DGlessner, 40°4'2" N 78°53'14" W, ,

DGlessnerphoto1, 20141003, DGlessner, 40°4'2" N 78°53'14" W, ,

HScully photo 6, 20141003, HScully, 40° 4'2" N 78°53'14" W, West,

SAM_3971, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3972, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3973, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3974, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3975, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3976, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3977, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3978, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3979, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3980, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3981, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3982, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3983, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3984, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3985, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3986, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

DGlessnerphoto6, 20141003, DGlessner, 40°4'2" N 78°53'14" W, ,

DGlessnerphoto4, 20141003, DGlessner, 40°4'2" N 78°53'14" W, ,

DGlessnerphoto2, 20141003, DGlessner, 40°4'2" N 78°53'14" W, ,

DGlessnerphoto5, 20141003, DGlessner, 40°4'2" N 78°53'14" W, ,

SAM_3987, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

HScully photo 4, 20141003, HScully, 40° 4'1" N 78°53'14" W, North-West,

HScully photo 7, 20141003, HScully, 40° 4'1" N 78°53'14" W, North-West,

SAM_3988, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

SAM_3989, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

SAM_3990, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

SAM_3991, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

SAM_3992, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

SAM_3993, 20141003, K.Corner, 40°4'1" N 78°53'14" W, ,

SAM_3994, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3995, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3996, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3997, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3998, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_3999, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4000, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4001, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4002, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4003, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4004, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4005, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4006, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4007, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4008, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4009, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4010, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4011, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4012, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4013, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4014, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

HScully photo 5, 20141003, HScully, 40° 4'2" N 78°53'15" W, West,

SAM_4015, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4016, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4017, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4018, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4019, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4020, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

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SAM_4022, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4023, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4024, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4025, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4026, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4027, 20141003, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4028, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4029, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4030, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4031, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4032, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4033, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4034, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4035, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4036, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4037, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4038, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

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SAM_4040, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4041, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4042, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4043, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

SAM_4044, 20141006, K.Comer, 40°4'1" N 78°53'14" W, ,

IMG_0750, 20141006, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0751, 20141006, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0752, 20141006, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0753, 20141006, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0754, 20141006, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0755, 20141006, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0756, 20141006, S.Stephens, 40° 4'2" N 78°53'15" W, ,

IMG_0757, 20141006, S.Stephens, 40° 4'2" N 78°53'15" W, ,

IMG_0758, 20141006, S.Stephens, 40° 4'2" N 78°53'15" W, ,

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IMG_0760, 20141006, S.Stephens, 40° 4'2" N 78°53'15" W, ,

IMG_0761, 20141006, S.Stephens, 40° 4'2" N 78°53'15" W, ,

DSC_0522, 20141007, Don Boucher, 40° 4'1" N 78°53'16" W, North, Handicap Parking looking north

DSC_0523, 20141007, Don Boucher, 40° 4'1" N 78°53'16" W, North, Handicap Parking looking north

DSC_0524, 20141007, Don Boucher, 40° 4'1" N 78°53'16" W, North, Handicap Parking looking north

DSC_0525, 20141007, Don Boucher, 40° 4'1" N 78°53'16" W, North, Handicap Parking looking north

DSC_0526, 20141007, Don Boucher, 40° 4'1" N 78°53'16" W, North, Handicap Parking looking north

DSC_0527, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0528, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0529, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0530, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0531, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0532, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0533, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire Safe

DSC_0534, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire resistant file cabinet

DSC_0535, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire resistant file cabinet

DSC_0536, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire resistant file cabinet

DSC_0537, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , Recovered Fire resistant file cabinet

DSC_0538, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, ,

DSC_0539, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, ,

DSC_0540, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, ,

DSC_0541, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, ,

DSC_0542, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , New VC Construction

DSC_0543, 20141007, Don Boucher, 40° 3'18" N 78°54'25" W, , New VC Construction

DSC_0544, 20141007, Don Boucher, 40° 3'4" N 78°54'19" W, ,

DSC_0545, 20141007, Don Boucher, 40° 3'4" N 78°54'19" W, ,

DSC_0546, 20141007, Don Boucher, 40° 3'4" N 78°54'19" W, ,

DSC_0547, 20141007, Don Boucher, 40° 3'4" N 78°54'19" W, ,

DSC_0548, 20141007, Don Boucher, 40° 3'4" N 78°54'19" W, ,

DSC_0549, 20141007, Don Boucher, 40° 3'4" N 78°54'19" W, ,

DSC_0550, 20141007, Don Boucher, 40° 4'2" N 78°53'15" W, South,

DSC_0551, 20141007, Don Boucher, 40° 4'2" N 78°53'15" W, South,

DSC_0552, 20141007, Don Boucher, 40° 4'2" N 78°53'15" W, ,

DSC_0553, 20141007, Don Boucher, 40° 4'2" N 78°53'15" W, ,

DSC_0554, 20141007, Don Boucher, 40° 4'2" N 78°53'15" W, ,

20141007_162403, 20141007, Don Boucher, 40°4'2" N 78°53'15" W, ,

IMG_0762, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0763, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0764, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0765, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0766, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0767, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0768, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

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IMG_0770, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0771, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0772, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0773, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0774, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0775, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0776, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0777, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0778, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0779, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0780, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0781, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0782, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0783, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0784, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0785, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0786, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0787, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0788, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0789, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0790, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0791, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0792, 20141007, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0793, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0794, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0795, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0796, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0797, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0798, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0799, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0800, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0801, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0802, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0803, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0804, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0805, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0806, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0807, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0808, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0809, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0810, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0811, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0812, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0813, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0814, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0815, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0816, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0817, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0818, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0819, 20141007, S.Stephens, 40° 4'2" N 78°53'15" W, , Recovered museum object

IMG_0820, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0821, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0822, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0823, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0824, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0825, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

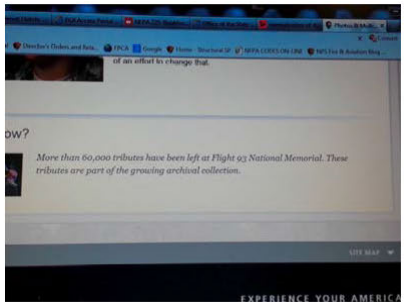
IMG_0826, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0827, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0828, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0829, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,

IMG_0830, 20141007, S.Stephens, 40° 3'18" N 78°54'26" W, ,



20141008_084231, 20141008, S.Stephens, 40°3'18" N 78°54'26" W, ,

20141008_095843, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_095848, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_095854, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_095919, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_100126, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_100129, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_100230, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_100441, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_100450, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_100458, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_101526, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

20141008_101556, 20141008, Don Boucher, 40°0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

IMG_0831, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0832, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0833, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0834, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0835, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0836, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0837, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0838, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0839, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0840, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0841, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0843, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0844, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0845, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0846, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0847, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0848, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0849, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0850, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0851, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0852, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0853, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0854, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0855, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0856, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0857, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0858, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0859, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0860, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0861, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0862, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0863, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0864, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0865, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0866, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0867, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0868, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0869, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0870, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0871, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0872, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0873, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

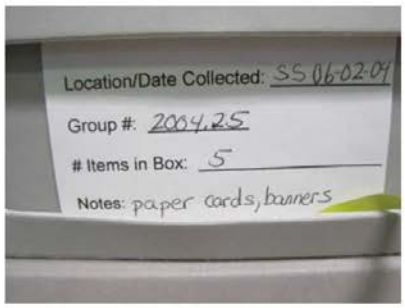
IMG_0874, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0875, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

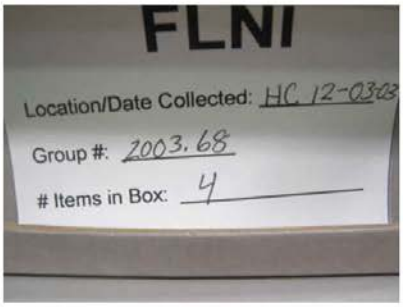
IMG_0876, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0877, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

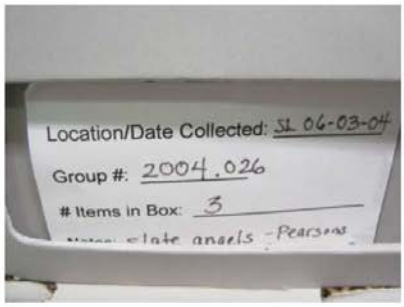
IMG_0878, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0879, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0880, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0881, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0882, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0883, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0884, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0885, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0886, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0887, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0888, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0889, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0890, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0891, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0892, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0893, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0894, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0895, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0896, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0897, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

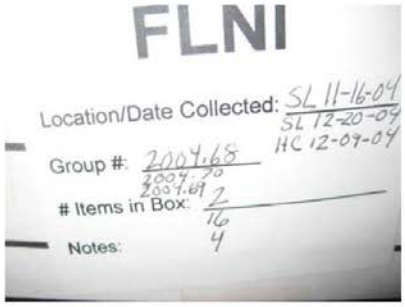
IMG_0898, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0899, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0900, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0901, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0902, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0903, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0904, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

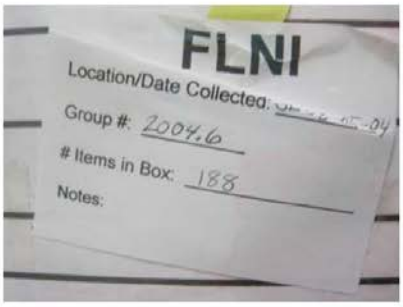
IMG_0905, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0906, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0907, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0908, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0909, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0910, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0911, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0912, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

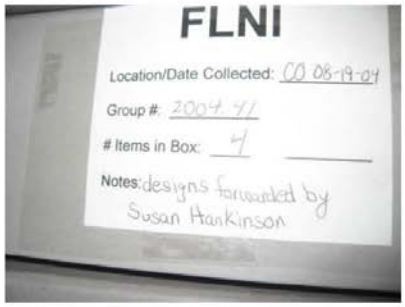
IMG_0913, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0914, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0915, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0916, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0917, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0918, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0919, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

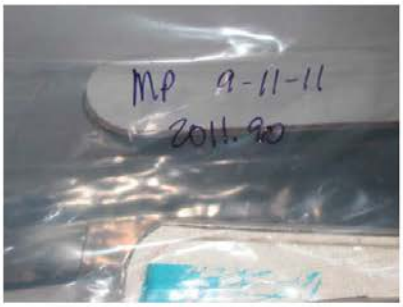
IMG_0920, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0921, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

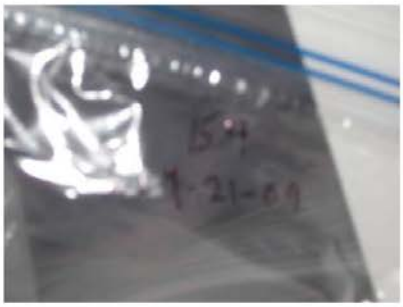
IMG_0922, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0923, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0924, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0925, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0926, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0927, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

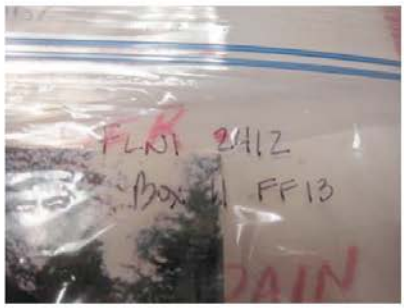
IMG_0928, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0929, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

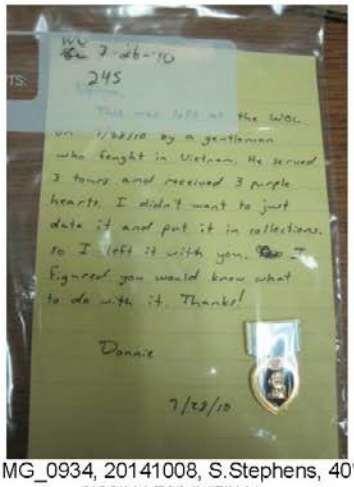
IMG_0930, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0931, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0932, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0933, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



IMG_0934, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0935, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0936, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0937, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0938, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0939, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0940, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0941, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0942, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0943, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0944, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0945, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

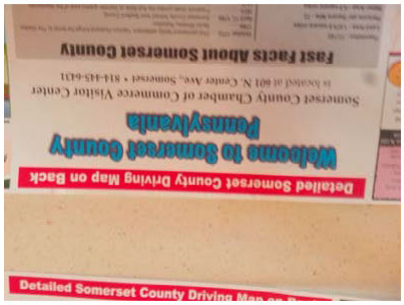
IMG_0946, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0947, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0948, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0949, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,

IMG_0950, 20141008, S.Stephens, 40° 0'29" N 79°4'45" W, ,



20141009_115911, 20141009, S.Stephens, 40°0'29" N 79°4'45" W, ,

20141009_115946, 20141009, S.Stephens, 40°0'29" N 79°4'45" W, ,

DSC_0001, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, South, Looking South from decking connected to remaining structure

DSC_0002, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, South, Looking South from decking connected to remaining structure

DSC_0003, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, South, Looking South from decking connected to remaining structure

DSC_0004, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, South, Looking South from decking connected to remaining structure

DSC_0005, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, South, Looking South from decking connected to remaining structure

DSC_0006, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, , Rear Steps of remaining structure. Boards removed for fire testing.

DSC_0007, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, , Rear Steps of remaining structure. Boards removed for fire testing.

20141009_120656, 20141009, S.Stephens, 40°0'29" N 79°4'45" W, ,

DSC_0008, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West, Chared decking material

DSC_0009, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West, Chared decking material

DSC_0010, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West, Chared decking material

DSC_0011, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West, Chared decking material

DSC_0012, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West, Chared decking material

DSC_0013, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0014, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0015, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0016, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0017, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0018, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0019, 20141009, Don Boucher, 40° 4'2" N 78°53'15" W, West,

DSC_0020, 20141009, Don Boucher, 40° 4'2" N 78°53'16" W, East, Inspection of remaining structure foundation.

DSC_0021, 20141009, Don Boucher, 40° 4'2" N 78°53'16" W, East, Inspection of remaining structure foundation.

DSC_0022, 20141009, Don Boucher, 40° 4'2" N 78°53'16" W, East, Inspection of remaining structure foundation.

DSC_0023, 20141009, Don Boucher, 40° 4'2" N 78°53'16" W, East, Inspection of remaining structure foundation.

DSC_0024, 20141009, Don Boucher, 40° 4'2" N 78°53'16" W, East, Inspection of remaining structure foundation.

20141009_132205, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132213, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132222, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, , Recovered museum object

20141009_132227, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, , Recovered museum object

20141009_132231, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, , Recovered museum object

20141009_132247, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, , Recovered museum object

20141009_132257, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, , Recovered museum object

20141009_132302, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132307, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132408, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132414, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132423, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132437, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132445, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,
Recovered museum object

20141009_132451, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132457, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132502, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132506, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132509, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132539, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132541, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132546, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132550, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132554, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132557, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132606, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132611, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132616, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132620, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132624, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132627, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

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S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132643, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132705, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132715, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132720, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132724, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132728, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132732, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132736, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132742, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

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S.Stephens, 40°4'2" N 78°53'15" W, ,

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S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132806, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132815, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132824, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132831, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132834, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132841, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_132844, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133018, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133022, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133028, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133330, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133336, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133337, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

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S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133352, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133407, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133410, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133411, 20141009,
S.Stephens, 40°4'2" N 78°53'15" W, ,

20141009_133415, 20141009, S.Stephens, 40°4'2" N 78°53'15" W, ,

DSC_0025, 20141009, Don Boucher, 40° 3'5" N 78°54'13" W, ,

DSC_0026, 20141009, Don Boucher, 40° 3'5" N 78°54'13" W, ,

DSC_0027, 20141009, Don Boucher, 40° 3'8" N 78°54'18" W, ,

DSC_0028, 20141009, Don Boucher, 40° 3'8" N 78°54'18" W, ,

DSC_0029, 20141009, Don Boucher, 40° 3'8" N 78°54'18" W, ,

DSC_0030, 20141009, Don Boucher, 40° 3'8" N 78°54'18" W, ,

DSC_0031, 20141009, Don Boucher, 40° 3'8" N 78°54'18" W, ,

DSC_0032, 20141009, Don Boucher, 40° 3'8" N 78°54'18" W, ,

DSC_0033, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

DSC_0034, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

DSC_0035, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

20141009_142432, 20141009, S.Stephens, 40°4'44" N 78°53'14" W, ,

DSC_0036, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

DSC_0037, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

DSC_0038, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

DSC_0039, 20141009, Don Boucher, 40° 4'44" N 78°53'14" W, ,

DSC_0040, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0041, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0042, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0043, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0044, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0045, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0046, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0047, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0048, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0049, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0050, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0051, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0052, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0053, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0054, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0055, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0056, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0057, 20141009, Don Boucher, 40° 0'29" N 79°4'45" W, , Museum storage in former Somerset headquarters

DSC_0058, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0059, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0060, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0061, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0062, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0063, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0064, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0065, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0066, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC_0067, 20141020, Don Boucher, 38° 52'35" N 77°2'1" W, , Boards removed for fire testing

DSC00504, 20141208, Don Boucher, 38° 52'35" N 77°2'1" W, , Cut board samples for fire testing

DSC00505, 20141208, Don Boucher, 38° 52'35" N 77°2'1" W, , Cut board samples for fire testing

DSC00506, 20141208, Don Boucher, 38° 52'35" N 77°2'1" W, , Cut board samples for fire testing

DSC00507, 20141208, Don Boucher, 38° 52'35" N 77°2'1" W, , Cut board samples for fire testing

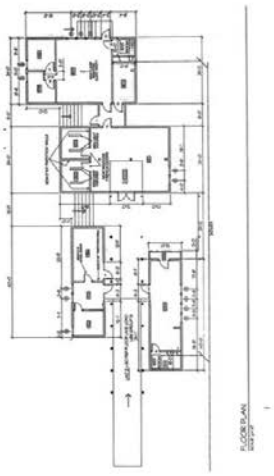
01-Photo Map, 20150108, Boucher, Don, , ,

02-Photo Map, 20150108, Boucher, Don, , ,

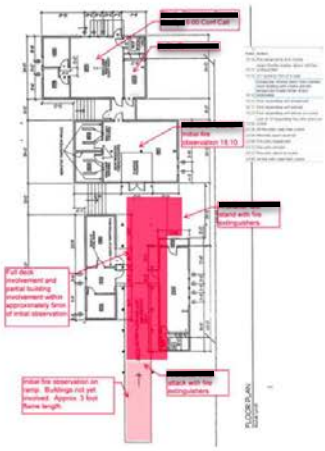
03-Photo Map, 20150108, Boucher, Don, , ,

04-Photo Map, 20150112, Boucher, Don, , ,

05-Photo Map, 20150112, Boucher, Don, , ,



FLNI Floor Plan, 20150112, , , ,



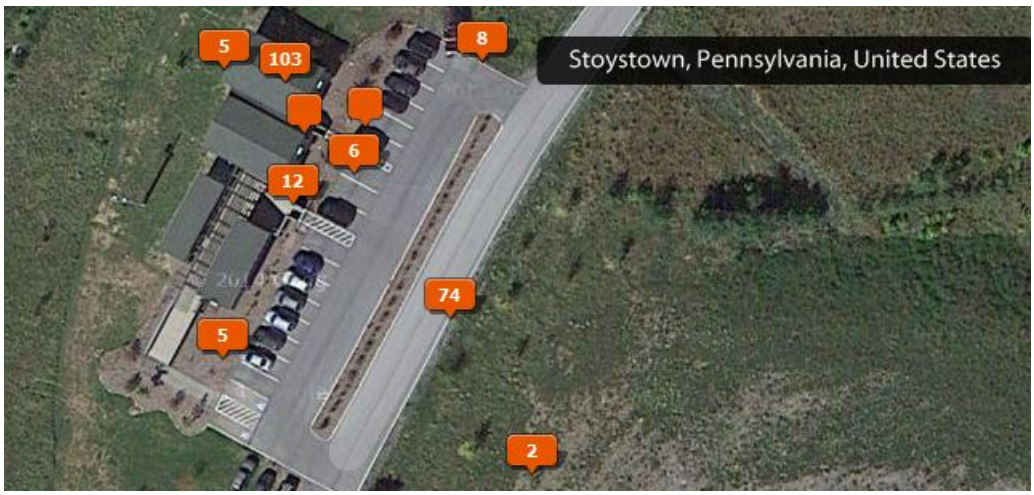
FLNI Floor Plan - initial observation, 20150112, , , ,

04-Photo Map_rev, 20150114, , , ,

05-Photo Map_rev, 20150114, , , ,

Overview Building ID, 20150114, , , ,

Overview-Weather, 20150114, , , ,


Stoystown, Pennsylvania, United States
5
103
8
6
12
74
5
2


Stoystown, Pennsylvania, United States
18
17


Somerset, Pennsylvania, United States
Flight 93 Memorial
183
S Ankeny Ave
601