

Attachment A - FEMA DDD REPORT

Friedensfeld Moravian Church

During the incident period 9/16/2017 through 9/22/2017, Category 5 Hurricane Maria (DR-4340-VI) produced heavy wind driven rain and strong winds, which resulted in downed trees, mudslides, flooding, accumulation of debris, and power outages throughout the entire island of St. Croix. Strong winds, wind driven rain and water accumulation severely damaged the Moravian Church VIC- Friedensfeld located at 1 Estate Mon Bijou in the Kingshill area, St. Croix (GPS: 17.745637, -64.779614). The Moravian Church VIC, is the owner and is responsible for the property and facilities (land, building, and contents). Please note that all repairs, replacements and method of work is subject to approval from State Historical and Preservation Office (SHPO).

The private non-profit organization Moravian Church VIC- Friedensfeld functions as a House of Worship serving the community and open to the public. Friedensfeld Church is a one (1) level Dutch Style custom designed and hand-built wood framed, and wood sided building constructed in 1854. During *1984, a major refurbishment project was completed, almost 35 years ago.* Friedensfeld Church, a wood structure with galvanized metal roof covering and a coral stone and mortar foundation has approximate dimensions of 60 LF wide x 80 LF long x 25 LF high. The foundation has noticeable signs of erosion and cracking, and appears major repairs are needed. Interior assemblies are composed of wood framed walls with tongue and groove wood plank board covering and tongue and groove exposed wood flooring. The main walkways, stairway areas, and Pulpit area are tongue and groove wood flooring with a commercial grade carpet covering.

The exterior of the Friedensfeld Church sustained damaged, from flying debris, strong winds and wind driven rain damaged roofing, exterior siding, exterior walls, gutter and downspout systems, window shutters, windows, and doors. Debris clogged the roof drains, allowing water to build up on the roof and the force from strong winds caused the corrugated metal sheeting and valley metal to move resulting in water infiltration into the building.

The interior of the Friedensfeld Church sustained damaged, from the water infiltration causing extensive damage to the interior flooring, floor covering, walls, doors, lighting fixtures, and finishes including building contents, furniture and equipment throughout the building and caused from mold and humidity being trapped throughout the building components.

The ceiling is a custom design hand crafted system of exposed wood rafters with a roofing system of corrugated metal sheeting covering and valley metal made up of multiple sections over water shield materials. The east end of the building has a self-standing

Attachment A - FEMA DDD REPORT

attached room with a typical gable design roofing system with corrugated metal sheeting and water shield coving over T1-11 wood sheeting with exposed rafters.

The central main area is a large open area with a perimeter 2nd floor loft sitting area on the North and South sides, on the West side a decking area (landing area) approx. (25 LF x 60 LF) for the large very old pipe organ and stairway landing. The west side is the main entry way with a small hallway leading to a stairway that goes to the loft area and to the belfry. The East end of the 2nd floor loft is open above the pulpit area. Interior windows are glass (both fixed and operating) with custom made wood shutters and louvers. Doors are wood single and double hung styles with louvers. Wood benches (Pews) arranged throughout the central main area on each side of the main walkway and 2nd floor loft sitting area for congregation seating.

All listed damages, descriptions and dimensions are included as described but are not limited to the actual work required for the completion of this project.

As a direct result of the event the facility suffered the following damages:

General Facility Information:

- **Facility Type:** Building
- **Building Type:** House of Worship (Religious)
- **Facility:** Friedensfeld Church
- **Facility Description:** Friedensfeld Church is a one (1) level Dutch Style custom designed and hand-built wood framed, and wood sided building constructed in 1854. During 1984, a major refurbishment project was completed, almost 35 years ago. Friedensfeld Church, a wood structure with galvanized metal roof covering and a coral stone and mortar foundation has approximate dimensions of 60 LF wide x 80 LF long x 25 LF high
- **Approx. Year Built:** 1854
- **Location Description:** Moravian Church VIC- Friedensfeld is located at 1 Estate Mon Bijou in the Kingshill area, St. Croix, USVI
- **GPS Latitude/Longitude:** 17.74564, -64.77961
- **Number of Stories:** 1

General Damage Information:

- **Date Damages:** 9/16/2017 to 9/22/2017
- **Cause of Damage:** Category 5 hurricane Maria produced heavy wind driven rain, strong winds and water accumulation.

Building Damage:

- **Belfry #3:**

Attachment A - FEMA DDD REPORT

- Building Exterior, 100 SF of Smooth Metal sheeting Roof, 10 FT long x 10 FT wide, damaged by hurricane force winds.
- Main Church Area #20:
 - Building Interior, 3,326 SF of Interior Painted Finish, damaged by driven rain through the roof.
- Main Church Area #16:
 - Building Interior, 1 each of 3-0' x 8-0' wood door and hardware, 3 FT wide x 8 FT high, damaged by driven rain through the roof.
- Main Church Area #17:
 - Building Interior, 3 each of Chandeliers, damaged by driven rain through the roof.
 - Building Interior, 10 each of 2 tube 4' fluorescent lighting fixture, damaged by driven rain through the roof.
 - Building Interior, 10 each of 12" x 9" sconce lighting fixture, damaged by driven rain through the roof.
- Main Church Area #18:
 - Building Interior, 2 each of 23" x 77" Wood window shutters, damaged by driven rain through the roof.
 - Building Interior, 2 each of 23" x 77" louver style wood interior door shutters, damaged by driven rain through the roof.
 - Building Interior, 2 each of 23" x 77" louver style wood external door shutters, damaged by driven rain through the roof.
- Main Church Area #19:
 - Building Interior, 2 each of 23" x 77" louver style wood external door shutters, damaged by driven rain through the roof.
- Main Church Area #1:
 - Building Exterior, 6,720 SF of Corrugated Metal sheeting Roof, 84 FT long x 80 FT wide, damaged by hurricane force winds.
- Main Church Area #10:
 - Building Exterior, 60 each of 6" gutter downspouts, 60 FT long, damaged by hurricane force winds.
 - Building Exterior, 80 each of 6" Half round gutter, 80 FT long, damaged by hurricane force winds.
 - Building Exterior, 8 each of Gutter collection box 16" x 16' x 10", 16 IN long x 16 IN wide x 10 IN high, damaged by hurricane force winds.
 - Building Exterior, 25 each of 6" half round gutter hanger (custom), damaged by hurricane force winds.
- Main Church Area #11:
 - Building Exterior, 5 each of 8" x 8" x 15' Concrete Entrance Steps, 15 FT long x 8 IN wide x 8 IN high, damaged by hurricane force winds.
- Main Church Area #12:
 - Building Exterior, 4 each of 12-inch x 18-inch x 9-inch LED pole mounted fixture, damaged by hurricane force winds.

Attachment A - FEMA DDD REPORT

- Main Church Area #13:
 - Building Exterior, 3,200 SF of wooden siding Finish Paint, damaged by hurricane force winds.
- Main Church Area #14:
 - Building Interior, 337.5 SF of Commercial Grade Red Carpet, 75 FT long x 4.5 FT wide, damaged by driven rain through the roof.
 - Building Interior, 252 SF of Commercial Grade Red Carpet, 56 FT long x 4.5 FT wide, damaged by driven rain through the roof.
 - Building Interior, 400 SF of Commercial Grade Red Carpet and Pad, w/Tac Strip, 20 FT long x 20 FT wide, damaged by driven rain through the roof.
 - Building Interior, 400 SF of Commercial Grade Red Carpet and Pad, w/Tac Strip, 20 FT long x 20 FT wide, damaged by driven rain through the roof.
 - Building Interior, 276 SF of Commercial Grade Red Carpet and Pad, w/Tac Strip, 23 FT long x 12 FT wide, damaged by driven rain through the roof.
- Main Church Area #16:
 - Building Exterior, 12 each of 1" X 6" Window Trim Board, 12 FT long x 6 IN wide, damaged by driven rain through the roof.
- Main Church Area #21:
 - Building Interior, 2,000 SF of Pest Control abatement, damaged by driven rain through the roof.
- Main Church Area #22:
 - Building Interior, 1 each of Allen Organ 57-inch x 32-inch Digital Computer Organ, damaged by driven rain through the roof.
- Main Church Area #23:
 - Building Interior, 1 each of Allen Organ 4' long wood bench, damaged by driven rain through the roof.
- Main Church Area #24:
 - Building Interior, 4 each of Speakers Wood cabinet style wall hung, damaged by driven rain through the roof.
- Main Church Area #25:
 - Building Interior, 4 each of Yamaha S15E Speakers floor stand up style, damaged by driven rain through the roof.
- Main Church Area #26:
 - Building Interior, 60 each of Wood Bench non padded (CHURCH PEWS), damaged by driven rain through the roof.
- Main Church Area #4:
 - Building Exterior, 270 SF of Valley Metal, 270 FT long x 1 FT wide, damaged by hurricane force winds.
- Main Church Area #5:
 - Building Exterior, 2 each of 1'-0" X 2' Wooden Single Hung Window, 2 FT long x 1 FT wide, damaged by hurricane force winds.

Attachment A - FEMA DDD REPORT

- Building Exterior, 4 each of 2'-0" X 6'-6" Wooden Single Hung Window Shutter, 6.5 FT long x 2 FT wide, damaged by hurricane force winds.
- Building Exterior, 4 each of 1" X 6" Window Trim Board, 12 FT long x 6 IN wide, damaged by hurricane force winds.
- Main Church Area #6:
 - Building Exterior, 48 each of Dolly Varden 1" x 6" x 30' wooden siding plank boards, 30 FT long x 6 IN wide, damaged by hurricane force winds.
- Main Church Area #7:
 - Building Exterior, 14 each of Dolly Varden 1" x 1' x 30' wooden boards, 30 FT long x 1 FT wide, damaged by hurricane force winds.
- Main Church Area #8:
 - Building Exterior, 1 each of 1'-0" X 2' Wooden Single Hung Window, 2 FT long x 1 FT wide, damaged by hurricane force winds.
 - Building Exterior, 4 each of 2'-0" X 6'-6" Wooden Single Hung Window Shutter, 6.5 FT long x 2 FT wide, damaged by hurricane force winds.
- Main Church Area #9:
 - Building Exterior, 2 each of 1'-0" X 2' Wooden Single Hung Window, 2 FT long x 1 FT wide, damaged by hurricane force winds.
 - Building Exterior, 4 each of 2'-0" X 6'-6" Wooden Single Hung Window Shutter, 6.5 FT long x 2 FT wide, damaged by hurricane force winds.
 - Building Exterior, 4 each of 1" X 6" Window Trim Board, 12 FT long x 6 IN wide, damaged by hurricane force winds.
- Main Church Vestry #15:
 - Building Interior, 1 each of 3-0' x 6-0' double hung wood door and hardware, 3 FT wide x 6 FT high, damaged by driven rain through the roof.
 - Building Interior, 1 each of 3-0' x 6-0' doorway Case Opening, 3 FT wide x 6 FT high, damaged by driven rain through the roof.
 - Building Interior, 1 each of 3-0' doorway Threshold, 3 FT long, damaged by driven rain through the roof.
 - Building Interior, 300 SF of 8" wide x 14' long wood plank flooring, 14 FT long x 8 IN wide, damaged by driven rain through the roof.
- Main Church Vestry #16:
 - Building Interior, 1 each of 3-0' doorway Threshold, 3 FT long, damaged by driven rain through the roof.

Attachment A - FEMA DDD REPORT

- Building Interior, 10 each of 6" wide x 30' long wood plank flooring, 30 FT long x 6 IN wide, damaged by driven rain through the roof.
- Vestry Room #2:
 - Building Exterior, 1,024 SF of Corrugated Metal sheeting Roof, 32 FT long x 32 FT wide, damaged by hurricane force winds.

Damage Description and Dimensions DDD:

I. Category E- Permanent Work- Building - Exterior:

1. The roofing system composed of a corrugated metal sheeting, ridge cap, and valley metal was damaged by the accumulation of water and the high wind forces. Heavy accumulation of flying debris damaged and clogged the roof drains, causing the roof to be flooded by the intensive rainfall. The water infiltrated through the corrugated metal sheeting and valley metal flashing that was uplifted/separated by the wind forces at the edges of the roof and through the valleys of the roof joints that were also damaged by the wind forces. The underlay material and ceiling rafters was also damaged by the flying debris and infiltrated water evidenced by the paint blistering and buckling found on several areas of the interior walls. The total area covered by this roofing system measures 6,720 SF damaged.
2. The roofing system at the East side Vestry of the building is composed of corrugated metal sheeting covering was completely damaged by the high wind forces that uplifted sections of the metal, and high winds removed these sections of roofing completely. This allowed water to freely infiltrate and damage the entire interior of the Vestry room. The total area covered by this roof is 1,024 SF. This area has been temporarily repaired; not sure the temporary repair method was meet with SHPO approval.
3. The roofing system at the West side of the building, the belfry roof is composed of metal sheeting covering was damaged by the high wind forces that uplifted sections of it, and high winds removed these sections of roofing completely. This allowed water to freely infiltrate and damage the entire interior of the belfry and interior of building below. The total area covered by this roof is 100 SF damaged.
4. Valley Metal flashing at edges of corrugated metal sheeting installed the full length of the building was damaged by the high wind forces and wind driven rain. {Mitigation to review improving the Valley Metal drainage, water shield, underlayment, and corrugated metal sheeting} Valley Flashing metal is composed of galvanized steel and total measure in length is 270 LF damaged.

Attachment A - FEMA DDD REPORT

5. On the South façade of the building; two (2) windowpanes were cracked by flying debris. The broken windows are operable type with a wood frame and have dimensions of 12-inch x 24-inch. (2) Large windows with wood shutter damaged including operational hardware and mounting hardware replacements. Window trim boards have dimensions (2) 1-inch x 6-inch x 12 FT each. Two (2) sets of windows wood shutters each measure 23 inches x 77 inches. Not all of the shutters match in materials used during construction. These shutters and all hardware including 24 LF of trim boards damaged.

6. On the Exterior facade of the entire building; Dolly Varden 1-inch x 6-inch X 30 FT length style wood planks that make up the majority of exterior siding, 48 planks were completely missing from the wall by the high wind forces. The total measure in length and width of 720 SQ FT. Areas of the siding do not match original style and type. Several of the planks measure 1-inch x 7-inch x 30 FT, and 1-inch x 8-inch x 30 LF. Several planks were damaged and cracked by flying debris. The 48 missing and damaged 1-inch x 6-inch x 30 FT planks.

7. On the Exterior facade of the entire building; Dolly Varden 1-inch x 12-inch X 30 FT length style wood planks that make up the corner trim of the exterior siding, approx. 14 planks were completely missing from the wall by the high wind forces the total measure in length and width of 210 SQ FT. Areas of the siding do not match original style and type. Several planks were damaged and cracked by flying debris. The 14 missing and damaged 1-inch x 12-inch x 30 FT planks.

8. On the North façade of the building; one (1) fixed windowpane was cracked by flying debris. The broken window has a wood frame and has dimensions of 12-inch. x 24-inch, window trim boards have dimensions (2) 1-inch x 6-inch x 12 FT each. two (2) set of wood shutters each measure 23 inches x 77 inches and hardware damaged.

9. On the South façade of the building; one (1) fixed windowpane was cracked by flying debris. The broken window has a wood frame and has dimensions of 12-inch. x 24-inch, window trim boards have dimensions (2) 1-inch x 6-inch x 12 FT each and two (2) set of wood shutters each measure 23 inches x 77 inches and hardware damaged.

10. The exterior gutter size 6-inch half round 60 LF and downspout size 6-inch 80 LF with custom hangers 25 hangers and 8- Collection Boxes measure 16-inch x 16-inch x 10-inch attached to the building were damaged by high wind forces, wind driven rain and flying debris. Several sections of gutter and collection boxes completely missing and damaged.

11. At the main entrance the entry way; five (5) 8-inch x 8-inch x 15 LF concrete steps are damaged and have signs of sprawling and cracking damaged from water and surface ground erosion. 75 LF of concrete steps damaged.

Attachment A - FEMA DDD REPORT

12. The 4 exterior lighting 18 FT high pole fixtures and solar panel, {solar outdoor lighting Inc.} these parking lot lighting fixtures were damaged by water and flying debris. The exterior lighting fixtures measure 12-inch x 18-inch x 9-inch and are made of aluminum with a polycarbonate housing and LED style. The four (4) light fixtures and solar assembly's were damaged.

13. The exterior wood siding and painted finish of the building was damaged by the excessive rain and the high wind forces. As detailed below, the total area of damaged exterior wood siding and painted finish was 3,200 SF.

- a. South facade – 1150 SF
- b. East facade – 882 SF
- c. West facade – 300 SF
- d. North Facade – 868 SF

II. Category E- Permanent Work- Building - Interior:

The central main interior area of the Church building is a large open area with a perimeter 2nd floor loft sitting area on the North and South sides, with a decking area (landing area) on the West side approx. (20 LF x 60 LF) for the large pipe organ and stairway landing. The east end of the 2nd floor loft is open above the pulpit area. The west side entry way has a small hallway leading to a stairway that goes to the loft area and to the belfry. Wood benches arranged throughout central main area on each side of the main walkway and 2nd floor loft sitting area for congregation seating.

The ceiling is a custom design hand crafted system of exposed wood rafters and a roofing system with corrugated metal sheeting covering and valley metal made up of multiple sections over water shield materials. Several interior areas have signs of water damaged, staining, paint bubbling and discoloration of unknown {may be mold} and multiple small holes in the water shield where direct daylight comes through.

Interior assemblies are composed of wood framed walls of vertical tongue and groove plank board 10 FT long x 1 FT wide {high winds forced a 30 FT section of wall moved almost a foot on average into the interior of the building} assemblies with wood tongue and groove flooring have signs of water damaged. Interior windows are glass (both fixed and operating) with custom made wood shutters. Doors are wood single and double hung styles.

1. The main walkway, entry areas, and Pulpit area have a damaged carpet covering- Carpet tread-ways of red commercial grade measured 75-LF x 4 ½ FT and 56LF x 4 ½ FT. Pulpit area is two (2)- 20FT x 20 FT sections measured 800 SF and one (1)-23FT x 12FT measured 276 SQ FT. The Pulpit area has carpet pad of the same dimensions, 800 SF and 276 SF with 120 LF of tact-strip.

Attachment A - FEMA DDD REPORT

15. The east end of the building has attached Vestry Room with one (1) 3-0 FT x 6-0 FT double hung wood door and hardware damaged. The doorway 3-0 threshold and case opening 3-0 FT x 6-0 FT damaged, the walls have a temp covering of T1-11 unfinished 576 SF. The flooring is made up tongue and groove planks (36) 8-inch-wide x 14FT long planks, 300 SF damaged. The gable design roof made up of corrugated metal sheeting coving over T1-11 wood sheeting open rafters. The roof system was not replaced “with like kind” and may not have SHPO approval.

16. At the Church main entrance and hallway had water infiltrating through the doorway due to high winds and water damaged; one (1) 3-0 FT x 8-0 FT wood door, one (1) 3-0 FT threshold, ten (10) 1-inch x 6-inch x 30 FT wood plank flooring, and Twelve (12) 1-inch x 8-inch x 20FT wood trim. The total dimensions 150 SF of flooring and trim damage is 240 LF damaged.

17. The total number of interior lighting fixtures damaged were 20. Three (3) fixtures are ceiling chandeliers, one (1) of these fell to the floor. One (1) is laying on the floor. The five (5) fixtures on each side of the central area are 2 tube 4 FT fluorescent fixtures that are water damaged. The five (5) on each side sconce lighting fixtures measure approximately 12-inch x 9-inch and are made of aluminum with a poly carbonate housing and fluorescent light bulbs were damaged.

18. The West wall windows have interior (2) sets of wood shutters 23-inch x 77-inch damaged and (2) sets of louver style wood shutters 23-inch x 77-inch and hardware damaged and (2) external wood shutter door style 23-inch x 77-inch and hardware damaged.

19. The South wall Doors have (2) louver style wood shutters 23-inch x 77-inch and hardware damaged.

20. Water infiltration and mold growth damaged the painted finish of the walls of the interior rooms. As detailed below the total area of interior painted finish damage on walls was 3,326 SF.

a. In the Vestry room two (2) walls measuring 16 FT. x 16 FT x 8 FT each were damaged for a total of 162 SF.

b. In the Central main area room, the total length of the room walls measuring 83 FT by the height of 10 FT. x 2 was damaged for a total area of 1,660 SF.

c. In the entrance main hallway, the two (2) walls of the hallway measuring 47 FT. in length by a 16 ft. height were damaged for a total area of 1,504 SF.

d. In the Central main area room, the total length of the room ceiling measuring 83FT by 47 FT was damaged area difficult to accurately calculate

Attachment A - FEMA DDD REPORT

due to the open non-painted area by design, for a total area of 720 SF of high work.

21. As a result of missing wood siding, the water infiltration, and the accumulation inside the building the space behind the wood tongue and groove assemblies has signs of mold and pest infestation. The total area of wood wall assemblies infected is 2,000 SF.