In accord with 44 CFR 206.206, the Town of Fairfield, CT (hereinafter “Town” or “Fairfield”) hereby submits its 1st Appeal relating to FEMA’s de-obligation of $4,340,054.11 under Project Worksheet (PW) 680 (Exhibit 1). PW 680 pertained to damages to the Penfield Pavilion (hereinafter “Facility”) resulting from Hurricane Sandy, October 27 to November 8, 2012 (FEMA 4087-DR-CT).

The determination at issue resulted from FEMA’s assertions under PW 680 that the Town’s restoration of the Facility failed to comply with National Flood Insurance Program requirements and certain Public Assistance regulations. These included pursuit of a change in the scope of work without prior notice to FEMA in violation of 44 CFR 13.30(d), construction of the Facility in a manner which violated 44 CFR §§ 60.3(e)(5) and 9.11(d), completion of work before FEMA could conduct environmental and historic preservation reviews, plus failure to obtain a consistency determination from the Connecticut Department of Energy and Environmental Protection.

FEMA provided official notification to the Town of its determination under PW 680 and the Town’s appeal rights by letter from George F. Vanderschmidt, Region I Disaster Recovery Manager, to both the Town and the Connecticut Department of Emergency Services and Public Protection, dated November 28, 2018. (Exhibit 2)

The Town asserts that FEMA’s determinations relating to the de-obligation of $4,340,054.11 is invalid since they represent a misapplication of the regulations and conflict with FEMA policies and practices affecting PW 680. Accordingly, the Town hereby submits its 1st appeal.

**Background**

Storm surge from Hurricane Sandy (FEMA 4987-DR-CT) substantially damaged the Facility, which is a 17,756 sq. ft. single story, wood/steel frame structure, surrounded by 10,811 sq. ft. wood decking. The storm surge breached over and around a concrete/stone revetment wall and a wooden bulkhead system designed to protect surrounding properties on the north, east and west of the Facility. Thereupon the storm surge water flowed under the Facility resulting in scouring which undermined and damaged the Facility’s foundation resulting in additional damages. Damages were initially defined by J.M. Albaine Engineering (hereinafter “Albaine”) and Roberge Associates Coastal Engineer, LLC who were retained by the Town to identify the damages and estimate repair costs, using local pricing.
As PW 680 advises, during the initial phase of PW 680 formulation FEMA requested that the Town retain an engineer to determine damages and recommend a scope of work to restore the Facility to its pre-disaster condition. On 2/6/13 the Town awarded the engineering contract to Albaine. On 7/23/14 Saugatuck Construction Group, retained by the Town, provided a scope of work to repair the damages and advised FEMA that its estimated cost to repair the Facility was $3,655,018. Thereafter, on 9/25/14 the Town advised FEMA that it believed the cost to repair the Facility exceeded the 50% of the replacement cost and asked that the Facility be replaced under 44 CFR 206.226(f). This request was supported by a CEF (Cost Estimating Formulation) calculation prepared by the Town and its consultant, Witt.

Thereupon, FEMA began its analysis of the Town’s CEF calculation, engaging in numerous meetings and requesting additional information from the Town. On 7/17/2015, approximately 10 months after the Town’s request for replacement of the Facility, FEMA agreed to such using its revised CEF. PW 680 was thereafter obligated on 12/17/2015 in the amount of $4,340,054.11. This was more than 3 years following the damages to the Facility.

At the time PW 680 was formulated FEMA estimated the Town had completed only 2% of the required work. As explained below, any work which was undertaken did not constitute the “start of construction”. As stated above, PW 680 contemplated a replacement of the Facility under 44 CFR 206.226(f). However, prior to the start of construction for replacement, the Town determined that it would make more sense and cost less to make several modifications to the replacement process.

Changes to Scope of Work of PW 680

On 4/18/2016, approximately 4 months after the obligation of PW 680 which was the replacement of the Facility under the 50% Rule, the Town advised the Grantee by letter (Exhibit 3) of its changes to the methodology for replacement of the Facility under PW 680 consisting of: (1) salvaging the West wing of the original building by detaching it from its foundation and the rest of the facility, moving it from its location then moving it back on to the new foundation and reutilizing it; (2) demolishing and fully reconstructing the East wing of the building and its foundation; (3) demolishing the wooden deck and pile system, and installing a new pile system and wooden deck; plus installing a new patio at an elevation midway between the new building height and beach (said patio was never built); (4) re-grading the parking lot by placing low cost road millings to slightly steepen the pitch, raising the high point of the parking lot thereby reducing the number of stairs and ramps previously required from the parking ramp to the building and establishing the natural grade plane consistent with the grade of the immediate vicinity by placing fill up to an elevation of 11’ under the building and 12’ around the building; and (5) retaining the existing timber bulkhead to the South and sealing the openings with whalers and sheeting and filling the grade on the building side of the bulkhead at an elevation of 12’. These changes for replacement of the Facility occurred because the Town was in the process of finalizing its final replacement design when PW 680 was obligated.
Importantly, the changes described in the Town’s 4/18/2016 letter were prepared by DeStefano & Chamberlain, LLC, the Town’s Design Architect Engineer firm, which also confirmed that the various changes were compliant with the building code, V zone requirements, and FEMA model regulations. As explained below, on 6/30/2016 the Town amended its 4/18/2016 notice of changes by deleting the changes pertaining to the bulkhead described above. (Exhibit 4)

Additionally, with its 6/30/2016 correspondence the Town included correspondence from the Town’s NFIP Coordinator deeming these changes to be acceptable. (Exhibit 5) Succinctly, the Town’s NFIP Coordinator advised that the Facility was being constructed in accordance with NFIP requirements and squarely met the requirements of FEMA Technical Bulletin #5.

The Grantee submitted the Town’s 4/18/2016 SOW changes to FEMA on 4/29/2016. According to FEMA’s 11/28/2018 determination analysis, on 5/12/2016 the Grantee telephonically advised FEMA that it expected more changes and asked FEMA to put the project on hold. Before submitting the final SOW change request, on 6/1/2016 the Grantee and Connecticut Department of Energy and Environmental Protection (hereinafter “CT DEEP”) sent a joint letter to the FEMA Region I Floodplain and Insurance Branch requesting technical assistance. (Exhibit 6)

In their 6/1/2016 request for technical assistance the Grantee and CT DEEP erroneously advised FEMA that the Town had decided to repair rather than replace the Facility, deviating from the replacement SOW, with construction for such having begun on 2/29/2016. CT DEEP was concerned that the project, as changed, would not be NFIP compliant. Thus, the Grantee and CT DEEP requested that the FEMA Regional Floodplain and Insurance Branch review the Town’s design plans to insure NFIP compliance and that there would be no eligibility or funding concerns when the project was completed. As a parenthetical, the Town has never asserted that the project was anything but a full replacement of the Facility.

As mentioned above, on 6/30/2016 the Town submitted a revised change to its previously submitted change to the SOW of PW 680, which deleted the bulkhead. This was done following consultation with CT DEEP to satisfy its concerns. Upon receipt of the Town’s 6/30/2016 revised change to the SOW of PW 680, the Grantee immediately sent such to the FEMA Region 1 Regional Administrator.

On 8/9/2016, the FEMA Region I Disaster Recovery Manager and Floodplain and Insurance Branch Chief jointly responded to the Grantee and CT DEEP 6/1/2016 request for technical assistance. (Exhibit 7).

In brief, this joint response referred to “repair” as an unauthorized change to the “replacement” SOW, with the design possibly failing to meet the requirements of 44 CFR §60.3, which would also result in violation of 44 CFR §9.11(d)(6) and the Town’s zoning regulations. This response seemed to focus on “repair” instead of “replacement” as a result of the Grantee’s and CT DEEP’s incorrect description of the Town’s replacement methodology. Further, FEMA questioned whether CT DEEP issued a consistency determination, thereby allowing FEMA to meet its requirement under the Coast Zone Management Act. Importantly, FEMA advised that this response did not
constitute a final determination or set penalties, but it did advise that FEMA was placing a financial hold on the project and would issue a Request for Information (hereinafter “RFI”). Again, the Town has never maintained or advised the Grantee or CT DEEP that the changes to the SOW changed the project from replacement to repair. That was a mis-statement of fact by the Grantee and CT DEEP.

**FEMA RFI**

On 9/30/2016, FEMA sent a 14 question RFI to the Town, fundamentally pertaining to three issues. (Exhibit 8) The first was whether the proposed design complied with the requirements of 44 CFR Part 9. The second was whether FEMA should undertake remedies for asserted possible violations of the Public Assistance award (i.e., failure to obtain FEMA’s approval before making SOW revisions, undertaking a repair instead of replacement, making elevation of the lowest floor of the Facility below 15.5’, and re-grading and placement of fill in the parking lot next to the Facility). Third, was whether there was compliance with environmental and historic preservation requirements.

**Fairfield’s Response to FEMA’s RFI**

On 10/28/2016 the Town responded to the FEMA RFI’s 14 questions relating to the following three issues: (1) Whether the requested scope comports with the minimum floodplain management requirements of the National Flood Insurance Program (“NFIP”) and 44 CFR §9.11 (d); (2) Whether the Applicant has violated the material terms and conditions of the award by commencing the revised scope before notifying and obtaining approval from the Grantee and FEMA; and (3) Whether the revised scope of work falls within the scope of a categorical exclusion under the National Environmental Policy Act and comports with other environmental and historic preservation laws. (Exhibit 9)

The Town’s response to the questions relating to the above 3 issues was confirmation that: (1) the requested scope comports with the minimum floodplain management requirements of the National Flood Insurance Program (“NFIP”) and 44 CFR §9.11 (d); (2) the Applicant did not violate the material terms and conditions of the award by commencing the revised scope before notifying and obtaining approval from the Grantee and FEMA; and (3) the revised scope of work fell within the scope of a categorical exclusion under the National Environmental Policy Act and comports with other environmental and historic preservation laws.

In support of its response, the Town included 8 exhibits, including the responses of its engineering firm, DeStefano & Chamberlain, and James Wendt, its NFIP/CRS Coordinator, each clearly supporting the Town’s position that the requested changes did not violate NFIP requirements and PW 680 should be amended to include the Town’s changes to the SOW. (Included in Exhibit 9)
Grantee Response to FEMA’s RFI

On 10/28/2016 the Grantee forwarded the Town’s response to FEMA’s 9/20/2016 RFI. (Exhibit 10) In that correspondence the Grantee acknowledged that the Town never asserted that its changes to the original SOW of PW 680 constituted a repair rather than a replacement. Further, the Grantee explained that the changes the Town identified were primarily changes to methodology in carrying out restoration of the Facility. The Grantee pointed out that the Town asserted that the changes at issue were in full compliance with local and State requirements and that this was supported by the local Floodplain Manager and a highly respected engineering firm.

Further, the Grantee noted that the Town was obligated to implement its restoration plan to eliminate potential liability while the Facility sat unused and in a structurally compromised state. The Grantee advised that its intention through meetings and discussions with the Town was to articulate a SOW change request to FEMA in a way which would allow FEMA to expeditiously approve it.

The Grantee explained that CT DEEP had raised two concerns about the changes. First, it had a concern about the bulkhead which had been constructed after FEMA 4023-DR-CT, which the Town intended to incorporate in the restoration of the Facility under PW 680. Second, CT DEEP was concerned about the restoration’s compliance with NFIP standards. The Grantee then explained that following meetings with the Town, the Town removed the bulkhead from the revised SOW revision request which satisfied CT DEEP.

Further, the Grantee advised that the Town’s A&E firm and NFIP Coordinator explained that the SOW revision was in full compliance with NFIP standards. This satisfied CT DEEP except for its concern regarding NFIP Technical Bulletin 5. Parenthetically, the Grantee further noted that as to CT DEEP and the Grantee CRS §25-68b through §25-68h were suspended for projects under FEMA 4087-DR-CT through agreement between CT DEEP and the Grantee.

As to the three issues raised in FEMA’s RFI the Grantee responded as follows:

1. **Compliance with the Town’s Zoning Regulations and 44 CFR Part 60.** The Grantee, CT DEEP and the Town believed that the project as designed met all requirements, excepting the CT DEEP concern regarding NFIP Technical Bulletin 5.

2. **Compliance with Other Terms and Conditions of the Public Assistance Project Award.** While FEMA did not approve the project revisions prior to the beginning of construction, the Town sought the revisions at issue well before construction varied from that approved in the PW’s scope of work. Further, the Facility was severely compromised and remained in that condition for more than 3 years before PW 680 was obligated. During that time the Facility was unusable, subject to additional damage, a hazard to the public, and a liability to the Town. Accordingly, the Town believed that the final design and methodology were prudent, saved costs and were in compliance with all applicable requirements. Accordingly, the Town did not anticipate the time required to obtain FEMA approval.
3. *Environmental and Historical Review.* The Grantee believed that the change in the SOW relates to methodology, with completion of the project resulting in the return of the Facility to its pre-disaster condition at the same location, with the same footprint, capacity and function. Further, the changed methodology represents less of a threat to the surrounding environment than the methodology existing in the original SOW of PW 680. Finally, the State Historic Preservation Officer previously determined that the Facility was neither eligible for inclusion on the National Register of Historic Places nor was a contributing resource, thereby eliminating the need for additional EHP review.

In conclusion the Grantee asserted that the only issue appeared to be whether FEMA believed that the revised SOW was in compliance with NFIP Technical Bulletin 5. If FEMA did not believe that the revised SOW was in compliance with NFIP Technical Bulletin 5, the Grantee requested that FEMA provide specific actions which would bring the design into compliance.

**FEMA Disaster Recovery and Floodplain and Insurance Branch Chief Joint Response to Request for Technical Assistance**

On 8/9/2016 the FEMA Region I Disaster Recovery Manager and Floodplain Management and Insurance Branch Chief jointly responded to the CT DEEP 6/1/2016 request for technical assistance. (Exhibit 7) The Disaster Recovery Manager and Floodplain Branch Chief advised that the Town may have failed to meet the requirements of 44 CFR 60.3 and may have violated the terms and conditions of the Public Assistance project award. However, FEMA advised that its response did not constitute a final determination, but PW 680 was being placed on hold.

**FEMA Floodplain and Insurance Branch Chief Response to Request for Technical Assistance**

On 10/17/2017, nearly one year after FEMA’s joint response to the Grantee and CT DEEP for technical assistance, the FEMA Floodplain Management and Insurance Branch Chief separately responded to the Grantee and CT DEEP request for technical assistance by declaring that the Town violated the minimum floodplain management criteria under 44 CFR 60.3(e)(5) and Technical Bulletin 5 by creating impermissible obstructions. (Exhibit 11) These included installation of major quantities of fill under and around the Facility, constructing new retaining walls which create an obstruction, and constructing the foundation with a horizontal beam above the natural grade and below the BFE.

However, before undertaking any enforcement the Branch Chief provided 60 days for the Town to submit additional information, including: (1) An explanation of the natural grade before Hurricane Sandy; (2) Why the major quantities of fill would not divert flood waters to adjacent properties and cause damage to the underside of the Facility; and (3) What corrective actions the Town would take to address the violations.
Importantly, the Branch Chief advised that he was not making a final determination but was allowing the Town 60 days in which to provide additional information as to the matters identified above. Additionally, the Branch Chief advised that there could be additional impediments to the project, including failure to obtain FEMA approval before pursuing a change to the SOW, failure to allow FEMA environmental and historic review before moving forward with the change, and failure to obtain a CT DEEP consistency determination.

**Fairfield Response to FEMA Floodplain and Insurance Branch Request**

On 12/12/2017 the Town responded to the FEMA Floodplain and Insurance Branch request for additional information by submitting the following documents (Exhibit 12):

A. An engineering report by DeStefano-Chamberlain, Design Engineers for the restored Penfield Pavilion, dated 12/1/17. (Exhibit 17)

B. An engineering report by RACE Coastal Engineering, an engineering firm with expertise along the Connecticut Shoreline, dated 12/1/17 (Exhibit 18)

C. Background - A description of the geomorphic characteristics of the area.

D. History of the buildings on the property.

E. A series of captioned historical photos of the buildings and grades over the last 100 years, # 1 – 25

F. A series of USGS Quadrangle Maps form 1920-2016 which illustrate the general land formation, # 1 – 6

G. The following historical mapping:
   
   1. Town of Fairfield Topographic Maps, Sheet 3, 1935, 1”=200’
   
   2. Town of Fairfield Topographic Maps, Sheets C-18 and C-19, April 12, 1968, 1” = 100’
   
   3. Town of Fairfield, April 2004 LiDar, 0.5’ contour intervals, 1”=50’
   
   4. April 2006 LiDar, superimposed on 2016 aerial photograph. 0.5’ contour intervals, 1”=20’
   
   5. Town of Fairfield Existing Condition Survey, April 2015, 1.0’ contour intervals, 1”=40’
   
   6. As- Built Improvement Location Survey, Geskck & Associates, P.C., 12/21/16, 1.0 ‘contour intervals, 1” = 30’

**FEMA Floodplain and Insurance Branch Final Review**
On 11/28/2018, the FEMA Region I Floodplain Management and Insurance Branch Chief responded to the 12/12/2017 additional information provided by the Town and a related teleconference. (Exhibit 13) Succinctly, the Branch Chief determined that the Town had not demonstrated that the Facility complied with floodplain management regulations. Specifically, the Branch Chief asserted that the Town placed horizontal grade beams for the Facility above the natural grade and below the base flood elevation in violation of 44 CFR § 60.3(e)(5).

Additionally, the Branch Chief noted that a community must enforce regulations meeting the requirements of 44 CFR § 60.3(e)(5) and take corrective actions to remedy violations. He further advised that failure to do so may result in formal enforcement actions of probation, suspension, Community Rating System retrogrades, or other appropriate actions. However, the Branch Chief additionally noted that in the instant case corrective action would require movement of the horizontal grade beams below natural grade or above the BFE. That he believed would require structural modifications to the completed Facility foundation, which he believed would be unfeasible. Accordingly, he advised that FEMA would be contacting the Town to discuss remedial actions and potential enforcement actions.

**FEMA Regional Office Disaster Recovery Determination Pertaining to PW 680**

On 11/28/2018, two years and seven months after the Town noticed the Grantee of its changes to the SOW of PW 680, FEMA Region I issued its determination relating to PW 680. (Exhibit 14) Succinctly, the FEMA Disaster Recovery Manager determined that PW 680 was ineligible for any FEMA grant assistance.

Specifically, FEMA advised this was due to: (1) The Town pursuing a change to the approved SOW without prior FEMA approval in violation of 44 CFR § 13.30(d); (2) The Town constructing the Facility in a manner violating 44 CFR §§ 60.3(e)(5) and 9.11(d); (3) FEMA’s foreclosure from conducting environmental and historic reviews before the work was completed; and (4) the Town’s failure to obtain a consistency determination from CT DEEP. It is this determination which the Town now contests in this 1st appeal.

**Fairfield’s Appeal Response to the 11/28/2018 FEMA Region I Disaster Recovery Determination Relating to PW 680**

In its 11/28/2018 determination which declared the entirety of PW 680 to be ineligible for FEMA grant assistance, FEMA found as follows:

1. The Town failed to obtain prior FEMA approval before commencing the change in scope of work as required by 44 CFR 13.30(d)(1) and PW 680;
2. The Facility violates the minimum floodplain management criteria requirements under 44 CFR §60.3(e)(5);
3. The Facility violates the minimization standards of 44 CFR Part 9;
4. The Town violated the consistency review requirements under the Coastal Zone Management Act; and
5. FEMA was unable to complete environmental and historical reviews before the Town completed its work.

Fairfield hereby responds to each of these determinations as follows:

**Failure to Obtain Prior FEMA Approval Before Commencing a Change in Scope of Work**

Fairfield recognizes that 44 CFR 13.30(d)(1) states:

> (d) Programmatic changes. Grantees or subgrantees must obtain the prior approval of the awarding agency whenever any of the following actions is anticipated:

> (1) Any revision of the scope or objective of the project (regardless of whether there is an associated budget revision requiring prior approval).

Further, Fairfield acknowledges that PW 680, as originally obligated stated:

> “Applicant shall notify the CT Department of Emergency Services and Public Protection (DESPP), Division of Emergency Services and Homeland Security (DESHS) prior to initiating any work that changes the scope of approved work as given in this sub-grant application.” (Exhibit 1)

Lastly, Fairfield acknowledges that the Grantee advised of this requirement in its letter transmitting obligated PW 680 to the Town, stating:

> “If it becomes necessary or desirable to deviate from the Scope of Work approved by FEMA in the enclosed Project Worksheet, you must immediately contact the State Public Assistance Coordinator (SPAC) Dana Conover at . . . to obtain written approval to do so. Failure to do so could jeopardize FEMA funding.” (Exhibit 1)

However, with respect to the proper application of 44 CFR 13.30(d)(1) the Town believes that there are several factors to be considered in the instant case. First, it is important to recognize that at the time the Town initially notified the Grantee on 4/18/2016 of its proposed modification to the SOW of PW 680 it had not deviated from the original SOW of 680 and had not started construction.

Specifically, consistent with its understanding that had to immediately notify the SPAC to obtain written approval it there was a desired deviation from the Scope of Work, the Town did so before the start of construction. Importantly, the Town notes, that among FEMA’s various definitions, there is only one which defines the *start of construction*. Moreover, there is no other definition
which would make sense relative to construction. Specifically, 44 CFR 206.342(h) defines start of construction as follows:

“(h) Start of construction for a structure means the first placement of permanent construction, such as the placement of footings or slabs or any other work beyond the stage of excavation. Permanent construction for a structure does not include land preparation such as clearing, grading, and placement of fill, nor does it include excavation for a basement, footings, or pier . . .”

In the Town’s case, construction was not begun when the Town requested on 4/18/2016 modification of the original SOW of PW 680. (Exhibit 3) Further, the modification to the original SOW was more cost-effective than the replacement methodology of the original SOW of PW 680.

Second, while the Town’s proposed changes to the SOW were being considered by the Grantee, FEMA and CT DEEP, the Town was confronted with a highly damaged facility which represented a safety hazard to the public, a potential liability to the Town, and a continuing loss of income to the Town. Further, if construction did not begin contracts would have expired representing a higher cost to the Town. These factors were confirmed by the Grantee on 10/28/2016 when it transmitted to FEMA Fairfield’s response to FEMA’s 9/30/2016 RFI. (Exhibit 10)

Significantly, Fairfield notes that FEMA’s 11/28/2018 determination analysis (Exhibit 15) spends considerable time discussing FEMA discretionary powers. Fairfield particularly notes FEMA’s discretion when FEMA stated:

“Discretion in FEMA’s Public Assistance Grant Program implementation is also prevalent in FEMA implementing regulations and policies . . .”

It is apparently this discretion which allowed FEMA to examine the Town’s 4/18/2016 request for modification of the original SOW of PW 680 for 31 months before determining that the project was ineligible for grant assistance.

Specifically, FEMA did not declare the project as ineligible under 44 CFR 13.30(d)(1) on first day that it believed that construction had taken place. Instead, FEMA chose to examine the acceptability of the modifications to the original SOW of PW 680. Thereupon, it took FEMA 31 months to ultimately determine that the changes to the original SOW were ineligible for fundamental reason that they failed to meet minimum floodplain management criteria. Thus, it appears that FEMA utilized its discretion to evaluate the changes to the original SOW, rather than impose 44 CFR 13.30(d)(1) at the outset. That confirms that FEMA chose to ignore 44 CFR 13.30(d)(1) and instead ultimately based eligibility of the changes on their compliance with floodplain management criteria.
Accordingly, Fairfield believes that it is now too late for FEMA to impose 44 CFR 13.30(d)(1) considering that Fairfield provided notice of its desired changes to the SOW prior to the start of construction, and it took 31 months for FEMA to render a determination as to the Town's requested modification of the original SOW. Without the Town's undertaking of construction after notification of its desired modification to the original SOW such would have unreasonably adversely affected the safety of the public, increased the Town's exposure to liability, and harmfully impacted the Town's economy.

For the above reasons the Town asserts that it is now both too late and unreasonable for FEMA to impose 44 CFR 13.30(d)(1) as a singular reason for denying FEMA grant assistance for the SOW modification of PW 680.

**Violation of Minimum Floodplain Management Criteria Under 44 CFR § 60.3(e)(5)**

The Town agrees with FEMA’s description of 44 CFR §60.3(e)(5), which specifically states:

“The NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, substantially damaged buildings, and substantial improvement of existing buildings in a SFHA. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the Flood Insurance Rate Map (“FIRM”), and identified the coastal high hazard areas (V Zones) on the FIRM. The current FIRM for the Town of Fairfield designates a regulatory floodway and coastal high hazard areas, such that the requirements of 44 C.F.R. § 60.3(e) apply.” (Exhibit 15, pg. 13)

The Town also agrees with FEMA’s description of the Town’s participation in the NFIP and its Zoning Regulations, which states:

“The Town is a participating community in the NFIP and has adopted the Fairfield Zoning Regulations that meet the minimum requirements of 44 C.F.R. pt. 60.48. The Fairfield Zoning Regulations, in turn, require that buildings and structures in flood prone areas as delineated on a FIRM “shall conform” to the standards set forth in Section 32 (entitled “Flood Protection”), which incorporate the requirements of 44 C.F.R. § 60.3 at Section 32.5.” (Exhibit 15, pgs.13 and 14)

However, the Town disagrees with FEMA’s lengthy discussion of a repairable facility which has been substantially damaged (i.e., a repair). Specifically, the Town’s revisions to the original SOW of PW 680 did not constitute a revision from the replacement to repair of the Facility and the Town never declared such. That notwithstanding, the replacement costs accruing under the revised SOW still exceed 50% of the replacement cost of the Facility as initially determined by FEMA.
Thus, even if the modified SOW was considered a “repair”, it would still qualify for replacement of the entire Facility – which is what the Town specifically undertook.

The description of a revision of replacement to repair seemingly arose from a mis-statement on the part of the Grantee. The change to the SOW merely reflected a protection of a portion of the Facility (west wing) by its removal and later return to the replaced Facility. The activity could not be described as a repair to the west wing since it was completely moved from the foundation and later moved back to be included in the replacement of the demolished remainder of the Facility. The revisions to the SOW constituted nothing more than a change of methodology for the replacement of the Facility which had been approved under PW 680.

That having been said, the Town believes that the replacement of the Facility continues to conform to the requirements of 44 CFR § 60.3. The importance of this is the fact that the Town’s request was not a major deviation from the original SOW of PW 680 (i.e., it remained a replacement). Further, it conformed to NFIP requirements, as explained below.

The Town acknowledges FEMA’s quotation of an applicable portion of 44 CFR § 60.3(e)(5), which states:

“[T]he community shall:…Provide that all new construction and substantial improvements within Zones…VE…on the community’s FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system.” (Exhibit 15, pg. 14)

Thus, the dispute in this case primarily turns on FEMA’s interpretation and application of FEMA’s Technical Bulletin 5 concerning the structural fill and free-of-obstruction requirements in coastal high hazard areas pertaining to the placement of the horizontal grade beams as described in the revised SOW. Specifically, FEMA believes that placement of the horizontal grade beams below the height of the natural grade, as increased by the addition of fill, violates NFIP requirements because even with the additional fill the horizontal grade beams must be placed below the height of what FEMA deems to be the natural grade, regardless of the increase in grade height.

FEMA’s position is:

“... the Technical Bulletin states that horizontal grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP. Second, the Technical Bulletin makes no allowance for the placement of horizontal grade beams above the
natural grade and below the BFE. This is because such a horizontal grade beam would constitute an impermissible obstruction under 44 C.F.R. § 60.3(e)(5).

The “natural grade” of a location means the grade unaffected by construction techniques such as fill, landscaping, or berming. A FIRM promulgated by FEMA will delineate the SFHA and the BFEs for a community, but will not identify the natural grade of any particular location. As the FIRM does not identify the elevation of the natural grade, determining the natural grade for a specific location (such as the site of the Penfield Pavilion) requires the analysis of site-specific topographical data, any available contour maps, light detection and ranging (“LIDAR”) data, field observations of surrounding topography, photographs, and other available data.” (Exhibit 15, pg.15)

Notably, the FEMA Disaster Recovery determination effects no independent judgment, but merely refers to the opinion of the FEMA Region I Floodplain Management and Insurance Branch Chief’s opinion of 11/28/2018. Specifically, FEMA advised:

“In his determination, he concluded that there was a substantial improvement of the Pavilion, the Pavilion is located in the VE Zone, the elevation of the natural grade at the site is between 8.0’ to 9.0’ NAVD 1988, and the BFE of the site is 13.0’ NAVD 1988. Because the horizontal grade beams are above the natural grade and below the BFE, the Branch Chief determined that the Pavilion violates the free-of-obstruction requirement at 44 C.F.R. § 60.3(e)(5) and, by necessary implication, violates the Fairfield Zoning Regulations.” (Exhibit 15, pg.15)

Thus, it appears that FEMA’s 11/28/2018 determinations relative to this issue turn on the matter of fill and the fact that the horizontal grade beams at issue are placed below the height of the added fill, but above the natural grade asserted by FEMA to exist at the time of the disaster.

DeStefano & Chamberlain Inc., the Town’s professional engineering firm, previously advised that:

“It is our reading of Technical Bulletin #5 that grade beams are a permissible obstruction regardless of their elevation, because they can become exposed by scour whether embedded in fill or in existing soils. Technical Bulletin #5 recognizes this: “Designers must anticipate this circumstance and design grade beams to resist flood, wave, and debris loads and to remain in place when undermined”. Grade beams were utilized to avoid the need for cross bracing and facilitate the re-support and connection of the existing building on the new foundation. Minimizing cross bracing is an encouraged practice in TB5 to reduce permitted obstructions.
Technical Bulletin #5 provides no guidance on how to measure “Natural grade” on an erodible site. It would be unrealistic to think that a grade beam could be buried enough below the beach level to never become exposed by scour. When one considers the realities of constructing a foundation in loose sand below tidal water levels, it becomes a necessity in many cases to build high not low. The depth of grade beam is mitigated with a pile foundation system which provides support for the building before during and after any scour.” (Exhibit 17, pg. 5)

Interestingly, FEMA never identifies height of the natural grade relating to the Facility other than an appearance of between 8’ and 9’ NAVD. FEMA’s definitive determination was, “…FEMA has concluded that … the elevation of natural grade of the site is 8.0 to 9.0 feet NAVD 1988, the BFE of the site is 13’ NAVD 1988, and the site is in the VE Zone. (Exhibit 13, pg. 9) Importantly, FEMA was looking solely at the grade existing below the damaged Facility.

In reaching this conclusion, the FEMA Floodplain Branch Chief specifically rejected the DeStefano & Chamberlain assertion that “…the dune crest elevation at the two ends of the building can be seen to be as 10.0’ and 11.0’ NAVD. Based upon the photographs, the LiDAR and the as built survey, it is our opinion that it is reasonable and logical to infer that this crest elevation would have continued across the entire length of the site in the property's natural state.” (Exhibit 17, pg. 2)

FEMA’s rejection was based upon its assertion that:

“none of the documentation shows that these two knolls were ever connected as a continuous dune. Even assuming arguendo that they did show that the two knolls were once connected as a continuous dune, that elevation would not cover the front (seaward) side of the pavilion, such that the elevation of the front of the pavilion would still be between 8’ and 9’ NAVD 1988 before the restorative work took place.” (Exhibit 13, pg.8)

Based upon the guidance of FEMA Technical Bulletin 5, Fairfield asserts this portion of FEMA’s determination is incorrect. Specifically, Technical Bulletin 5, pages 21 and 22, advises:

“If additional fill is proposed for a site, the proposed final grade should be compared to the local topography. If the proposed final fill is similar to grades and slopes in the immediate vicinity, a detailed analysis of the effects on flood flow and waves need not be required. If more than 2 feet of fill is proposed and the proposed fill exceeds local grade heights and variations an analysis must be performed.”

Importantly, Technical Bulletin 5 does not require that the grades and slopes in the immediate vicinity need be connected as a continuous dune, only that they be in the immediate vicinity. At worst, the fill at issue was correctly used to increase height to similar grades and slopes in the
immediate vicinity. Further, relative to merely raising the grade elevation 2', Technical Bulletin 5, pg. 22, advises that a detailed analysis of the effects on flood flow and waves is not required. Relative to the Facility and modified SOW the amount of fill was 2½'. That notwithstanding, an analysis was performed by the Town’s coastal consultant, Race Coastal Engineering. (Exhibit 18)

Most importantly, as discussed in detail below, when the building was demolished (in 2 phases, 2007 and 2010) and replaced by new construction, the grade under the building was lowered to 8.0' NAVD to allow for the floor construction of the building, which had a finish floor elevation of 10.9' NAVD. THE GRADE ELEVATION 8.0 UNDER THE PRE-SANDY BUILDING WAS NOT THE NATURAL GRADE ELEVATION OF THIS PORTION OF THE SITE. The natural grade would have been the continuous dune with crest elevation 10.0’ NAVD. The project at issue filled in the breach in the dune.

The fact that the grade elevation under the pre-Sandy building was not the natural grade elevation of the site at issue is explained as follows. The original building dating back to the early 1900’s was constructed between two high points found to the east and west of the building. Over many years sand naturally built up under the structure, filling in the gap between the natural grade and the underside of the building. The building itself became integrated into a naturally developing dune which prevented floodwaters from traveling across Penfield Beach and into the floodplain north of Fairfield Beach Road.

This natural accretion of sand aided in protection of homes located north, east and west of Penfield Beach. When Penfield Pavilion was constructed in 2008-2010 the building was elevated to the then current FEMA AE 12 elevation, which created a large unobstructed opening between the finished grade and the bottom of the building. In the process the dune had been excavated to construct the new facility’s foundation system. This sand was not replaced, potentially exposing the neighborhood to flooding from Long Island Sound. However, the placement of additional sand upon the excavated dune under the revised SOW of PW 680 was intended to mirror the site conditions existing prior to the 2008-2010 construction of the pavilion, and thereby reduce the potential for neighborhood flooding.

Based upon the fact that the grade elevation under the pre-Sandy building was not the natural grade elevation of that portion of the site, FEMA’s assertion that the addition of fill below the Facility left the natural grade elevation of between 8’ and 9’ NAVD 1988 unchanged is simply incorrect. The correct explanation is that of the Town’s Connecticut licensed engineer that the 8' grade elevation under the pre-Sandy building was not the natural grade, but the natural grade was a prior continuous dune with an elevation of 10.0 NAVD.

Importantly, while Technical Bulletin 5 states that “horizontal grade beams placed with their upper surfaces flush with or below the natural grade are permissible”, Technical Bulletin 5 does not state
that horizontal grade beams placed with their upper surfaces flush with or below a repair restoring the natural grade are impermissible.

More importantly, FEMA’s determination is incorrect because it failed to recognize or consider that the natural grade below the Facility had been deliberately reduced by construction when the Facility was first built. The SOW modification merely increased the grade below the Facility to the original actual natural grade. This is not prohibited by Technical Bulletin 5 and FEMA is clearly wrong.

Thus, Fairfield asserts that placement of the horizontal grade beams below the elevation increased by fill does not violate Technical Bulletin 5 or the free-of-obstruction requirement of 44 C.F.R. §60.3(e)(5). Specifically, 44 C.F.R. § 60.3(e)(5) requires “. . . all new construction and substantial improvements within Zones . . . VE . . . on the community’s FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening designed to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. . . “. Importantly, as discussed in detail by Race Engineering (Exhibit 20, pg. 4) the Town’s Zoning Regulation 32.5(c) conforms to 44 CFR 60.3(e)(5), and the construction at issue complies with the Town’s Zoning Regulations.

Consequently, the most significant criterion is that the distance between upper level of the grade under the Facility and the BFE is sufficient to allow flood waters to flow beneath the Facility without obstruction. Technical Bulletin 5 effectively confirms that Fairfield’s revised SOW to PW 680 meets that criterion by placement of the horizontal grade beams below the upper level of the revised grade, leaving a space of 2 feet between the upper level of the grade and the floor of the Facility located at the BFE. As Technical Service Bulletin 5, pg. 24, advises, “There are no established rules as to what constitutes acceptable vertical clearance but, for floodplain management purposes, a vertical clearance of 2 feet is considered adequate in most cases.”

Consistent with the above arguments the Town’s professional engineering consultants take issue with FEMA’s 11-28-2018 determinations (FEMA Floodplain and Insurance Branch and Disaster Recovery Branch). Specifically, these CT professionally licensed engineers, who have extensive professional experience with regulatory compliance for construction within floodplains, assert that FEMA 11/28/2018 interpretations of Technical Bulletin 5 as related to 44 C.F.R. §60.3(e)(5) are incorrect. Notably, it appears that neither George F. Vanderschmidt, FEMA Disaster Recovery Manager, nor Richard Nicklas, FEMA Floodplain Management and Branch Chief, who interpreted Technical Bulletin 5 and published the determinations at issue are licensed engineers.

In specific response to the FEMA determinations being appealed, the Town’s professionally licensed engineers, who were engaged to replace the Facility and who have significant
experience with NFIP compliance, expressed the opinions including the following points. However, it is important to review the entirety of their opinions (Exhibits 16 and 19).

DeStefano & Chamberlain (Exhibit 16):

“**Point 1. Natural Grade**” is not defined in Technical Bulletin 5. The Town’s definition is consistent with TB 5. Neither 44 CFR 60.3 nor TB 5 go into any detail to define “natural grade” and how to measure it. This left the Town to read and interpret the TB 5 guideline as it was written in plain English. “Natural” means natural . . .

Mr. Niklas defines natural grade as the pre-event (Hurricane Sandy) grades on the property, using recent topographic surveys. Such a definition is inherently illogical, and technically unsound. He concludes that “natural grade” elevation varied between 8 and 9 NAVD based on survey data. The Town concluded natural grade elevation varied between 10 and 11 NAVD based on adjacent dune crests.

The Penfield Site is a beach. It is a dynamic landform. It is inaccurate and misleading to use modern topographic maps of a site that has long been disturbed, developed, modified, re-graded, scoured, replenished, and covered over with buildings for 100 years. Such an analysis paints a false picture of what the natural conditions are.

The use of non-structural fill on the property has since been accepted by FEMA by virtue of the fact that it is not cited in the determination of violation, which suggests FEMA views the site grades as consistent with natural conditions.

**Point 2, The Town has demonstrated the project will not impact the “free flow of flood waters”** Mr. Niklas acknowledges receipt of engineering reports from RACE Coastal Engineering and DeStefano & Chamberlain, Inc. that have, respectively, calculated the appropriate flood forces and certified that the foundations can resist these forces. Further, the Flood Impact Analysis performed by RACE has demonstrated that there are no adverse impacts, such as redirection, reflection, or increased wave heights on adjacent structures or properties. Mr. Niklas does not refute the engineering documentation presented, so we can only assume he accepts it . . . (analysis contained in Exhibit 19, pg. 3)

The Town has satisfied the intent – and letter - of the only paragraph in TB 5 addressing grade beams, by providing detailed engineering analysis in support of the design of the Penfield Pavilion. The Town has further proved thru this analysis that the grade beams will not reduce or impact the free flow of flood waters under the building, which is, after all, the driving purpose of Technical Bulletin 5 in the first place
Point 3, TB 5 never states that grade beams set above “natural grade” is a default violation of 44 CFR 60.3. Although we do not accept Mr. Niklas’ determination that the grade beams are above natural grade, such a scenario would still not constitute a default violation of the NFIP. Technical Bulletin 5, contains only one 1 paragraph out of the 32 page document, which discusses grade beams . . . Nowhere in the above paragraph is it stated that grade beams with their upper surfaces set above “natural grade” is a default violation by itself. However, Mr. Niklas has treated them as such in rendering his decision. TB 5 clearly describes a concern for scour and erosion which will expose the grade beams to collect loads from flooding, and that “Designers must anticipate this circumstance and design grade beams to resist flood, wave, and debris loads and to remain in place and functional when undermined”. Such steps were taken by the Town as described in the prior response, and repeated in Point 2.

Point 4. Technical Bulletin 5 is a guideline, not an absolute TB 5 is a guideline meant to help builders and designers understand the flood regulations adopted by NFIP communities and how FEMA currently interprets them. It is not meant to supplant the professional expertise of licensed design professionals (coastal, geotechnical, and structural engineers) and municipal land use officials trained in best practices and knowledgeable in local conditions. Note the following language:

The NFIP Technical Bulletins provide guidance on the minimum requirements of the NFIP regulations. . . . The bulletins are intended for use by State and local officials responsible for interpreting and enforcing the requirements in their floodplain management regulations and building codes, and by members of the development community, such as design professionals and builders. . . The bulletins do not create regulations; rather, they provide specific guidance for complying with the requirements of existing NFIP regulations.

TB 5 is just that - important and useful guidance - but is not law, and not intended to replace the Federal Regulations, nor create law.

Point 5. Grade beams are not mentioned, regulated, or addressed in any manner in 44 CFR 60.3. It is unclear how the Town can be held in violation of 44 CFR 60.3, with respect to the sole issue of the determination violation of the NFIP - grade beams - when 44 CFR 60.3 never mentions them. The terms “grade beams” and “natural grade” never appear in the federal regulations, only in Technical Bulletin 5. . .”
"1. It is the opinion of RACE that Penfield Pavilion is in compliance with 44 C.F.R. § 60.3(e)(5). 44 C.F.R. § 60.3(e)(5) and its adoption into Town Zoning regulations in Section 32.5(c) requires that the space below the lowest floor be free of obstruction. As constructed, the grade beams are below grade and the area under the building is free from obstructions other than required foundation and building access elements.

FEMA’s conclusion in their November 28, 2018 letter states, “FEMA has determined that the Town has violated the minimum floodplain management criteria under 44 C.F.R. § 60.3(e)(5) by creating an impermissible obstruction through the construction of the foundation of the Pavilion with horizontal grade beams above the natural grade and below the BFE. [emphasis added]” These statutes referenced above and applicable to the design of the building foundation do not specifically restrict ‘grade beams above the natural grade and below the BFE’. . .

Race Coastal Engineering then cites the exact language of 44 CFR 60.3(e)(5) and advises that “Town Zoning Regulation 32.5(c) has adopted this . . .”, citing the exact language of Zoning Regulation 32.5(c).

2. FEMA’s conclusion that the building is not compliant seems to be drawn on an interpretation of FEMA’s Technical Bulletin 5, Free-of-Obstruction Requirements (2008) (“TB 5”). TB 5 is a guidance document not adopted as a statute or legally binding building code. Furthermore, there is latitude for interpretation that Penfield Pavilion, as constructed, is compliant with TB 5.

Race Coastal Engineering states: “TB 5 notes that “Several of the NFIP’s flood-resistant design and construction requirements are performance requirements, not prescriptive requirements [emphasis added]. In other words, the expected building performance is stated, but the ways by which that performance may be achieved are not prescribed. It is up to the community official to determine whether a specific design submitted by a design professional satisfies the performance requirement. (pg. 5)” . . . “This Technical Bulletin does not recommend a blanket prohibition of below-BFE building elements and site development practices…. (pg. 6)”

Race Coastal Engineering then further notes: “. . . TB 5 does not seem to be intended to provide prescriptive requirements, but rather to insure performance requirements are met. It is reasonable to assume that such “performance requirements” are related to potential damage caused by building elements. This assumption is supported by the following from TB 5:
“Any construction or development practice below the BFE (even piles and columns permitted by the NFIP) will cause a localized disruption of flow and waves during the base flood. Whether the localized disruption is great enough to harm the elevated building or surrounding buildings is the central question.” (pg. 5)

In our interpretation of TB 5 the statement “Grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP.” (pg. 13) is a prescriptive requirement that, if met, would allow for the building to comply with NFIP requirements. It is our further interpretation that grade beams constructed at other elevations may be allowed under NFIP if it satisfied the performance requirements of not harming the elevated building or surrounding buildings”.

3. TB 5 provides for the possibility to evaluate potential obstructions (and associated performance requirements) by use of numerical modeling. Such modeling has been performed and has indicated that no adverse impacts associated with grade beams as constructed would occur.

Race Coastal Engineering specifically notes: “TB 5 states: “Any construction or development practice below the BFE (even piles or columns permitted by the NFIP) will cause localized disruption of flow and waves during the base flood. Whether the localized disruption is great enough to harm the elevated building or surrounding buildings is the central question. [emphasis added]” (pg. 5)

“In responding to this “central question”, RACE performed coastal engineering analyses using methodologies outlined in FEMA’s Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update (February 2007), the U.S. Army Corps of Engineers (“USACE”) Coastal Engineering Manual (April 2002), and the USACE’s Shore Protection Manual (1984). These analyses incorporated the use of numerical coastal hydraulic models developed by FEMA and the USACE. As part of this effort, the grade beam elements of the building were reviewed to determine if they would divert water to adjacent properties or cause damage to the Pavilion structure.”

Race Coastal Engineering summarizes its determinations by advising:

“It is the opinion of RACE that if the building has been designed to be stable accounting for the loads and scour depths discussed above then the fill, grade beam and retaining wall under the building will not divert water to adjacent properties and will not cause damage to the underside of the Pavilion structure during flood events. As such, these
elements should not be considered “significant” obstructions and are consistent with the floodplain management criteria of 44 C.F.R. 60.3(e)(5)."

The stability of the building and structural capacity to resist the loads and scour was analyzed by DeStefano & Chamberlain, Inc. Mr. Kevin H. Chamberlain, P.E. in his December 1, 2017 letter to Mr. Joseph Michelangelo, P.E., with the subject, RE: Penfield Pavilion – Repair and Reconstruction 323 Fairfield Beach Road, Fairfield, CT states: “We have performed structural calculations to verify that the grade beams can resist these loads in combination with hydrostatic pressure, wind, and gravity loads. We can certify that the foundation system can safely resist flood depths, pressures, velocities, impact, and uplift forces associated with the Base Flood in the VE 13’ Zone based on these calculated pressures.” (Exhibit 20, pg. 4)

In summary, the Town asserts the important facts of this issue are these: (1) Prior to Hurricane Sandy the natural grade below the pavilion was reduced by construction; (2) The revised SOW or PW 680 restored the grade below the Facility to its original natural height; and (3) Consistent with Technical Bulletin 5 there is sufficient vertical clearance between the top of the increased grade and the Facility’s lowest floor.

Most importantly, the Town’s licensed professional engineers (DeStefano and Chamberlain and Race Coastal Engineering) support the Town’s position and meticulously dispute the determinations of FEMA’s non-engineers regarding Technical Bulletin 5 (engineering-related guidance) and 44 CFR § 60.3(e)(5) (engineering-related regulation).

For the above reasons the Town asserts that it is incorrect for FEMA to assert that the revised SOW represents a violation of 44 CFR §60.3(e)(5) on the basis of Technical Bulletin 5. The Town asserts that its modified SOW for the replacement of the Facility complies fully with 44 CFR §60.3(e)(5) and therefore its modified SOW should be deemed eligible for FEMA grant assistance.

**Violation of Minimization Standards of 44 CFR Part 9**

The 11/28/2018 FEMA Disaster Recovery Branch determination analysis explained that Executive Order 11988 requires federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains in providing federally assisted or financed construction and improvements and conducting federal programs affecting land use. Thus, each federal agency is directed to use a decision-making process to evaluate the potential effects of projects located in or affecting the floodplain and consider alternatives to avoid adverse effects. FEMA has therefore adopted implementing regulations at 44 C.F.R. pt. 9, Floodplain
Management and Protection of Wetlands to set forth the policy, procedures, and responsibilities to implement and enforce the Executive Order.

The FEMA analysis further explains that 44 CFR. pt. 9 applies to all Agency actions which have the potential to affect floodplains or their occupants, or which are subject to potential harm by location in floodplains. Agency actions include federally financed or assisted construction and improvements. Accordingly, FEMA applies 44 CFR. pt. 9 to all projects under a Public Assistance grant for a major disaster.

The determination analysis additionally explains that the compliance review process under 44 C.F.R. pt. 9 must be completed before FEMA approves funding and before work is started because the review may identify steps to be taken or conditions to be met before the project can be implemented, such as mitigation measures for actions in the floodplain. (Exhibit 15, pgs.16 and 17)

Based upon the above explanations, FEMA simply found that because Town commenced construction on the change in the scope of work before FEMA completed its review under 44 C.F.R. pt. 9. the Pavilion is in violation of 44 C.F.R. § 9.11(d)(6) and the project is ineligible for financial assistance.

While FEMA’s analysis reasonably explains 44 CFR pt. 9, it ignores the simple facts of the instant case. First, compliance with the minimization standards of pt.9 had to be approved by FEMA prior to its obligation of PW 680. Second, the change to the original scope of work of PW 680 was insignificant with respect to FEMA’s compliance review under pt. 9. It was merely a modification to the replacement technique of original SOW.

Specifically, the change to the SOW at issue was merely to the methodology for replacement of Facility which had already been approved under PW 680, with completion of the project resulting in the return of the Facility to its pre-disaster condition at the same location, with the same footprint, capacity and function.

Accordingly, the change to the original SOW of PW 680 changed none of the conditions or outcomes which could affect FEMA’s pt. 9 minimization determination of the original SOW. Thus, there is no basis to deny eligibility of the project relating to the minimization requirements of pt. 9 since there was no change which would have affected FEMA’s prior minimization determination. For the above reasons the Town asserts that it is incorrect for FEMA to assert a violation of the minimization standards of 44 CFR Part 9 as a singular reason for denying FEMA grant assistance for the SOW modification of PW 680.
Violation of Coastal Zone Management Act Consistency Review Requirements

The Town believes that FEMA correctly advised in its 11/28/2018 determination analysis that:

“The Coastal Zone Management Act (“CZMA”) requires that federal agency actions with reasonably foreseeable effects on any land or water use or natural resource of the coastal zone be consistent, to the maximum extent practicable, with the enforceable policies of a coastal state’s federally approve Coastal Management Program. Under the National Oceanic and Atmospheric Administration’s (“NOAA”) implementing regulations for the consistency requirement, there are four types of federal actions: federal agency activities, federal license and permit activities, outer continental shelf plans, and federal assistance to state and local governments. The fourth type of federal action, “federal assistance,” is the one applicable to the Public Assistance Grant Program.

The NOAA implementing regulations for federal assistance actions are intended to ensure that “federal assistance to applicant agencies for activities affecting any coastal use or resource is granted only when such activities are consistent with approved management programs.” In carrying out this intent, the regulation at 15 C.F.R. § 930.94 requires a state or local government (called an “applicant agency”) to submit its application for federal assistance to the state agency for consistency review concerning any proposed federal assistance activity that is listed in the state’s Coastal Management Program as a type of activity that will have a reasonably foreseeable effect on any coastal use or resource and occurring within the coastal zone. If the state agency does not object to the proposed activity, then the federal agency may approve the federal assistance to the applicant agency. On the contrary, following receipt of a state agency objection, a federal agency is prohibited from providing assistance for the activity.

The CTDEEP administers the Connecticut Coastal Management Program and is the cognizant state agency for determining whether a federal assistance activity is consistent with that Program . . .” (Exhibit 15, pg.18)

However, the Town disagrees with that portion of FEMA’s determination analysis, which stated:

“Recognizing that the original scope of work to replace the Pavilion implicated the Coastal Zone Management Act and the need for a consistency determination, the Record of Environmental Consideration (“REC”) for Project Worksheet 680 stated that the Applicant was responsible for “coordinating and obtaining any permits from the Connecticut Department of Energy and Environmental Protection…prior to initiating work.” (Exhibit 15, pg. 18)
While the Town recognizes that it may be easier to make changes correcting existing deficiencies if such are reviewed prior to initiating work, the fundamental matter is that FEMA cannot provide funding without the CT DEEP consistency review determination. Thus, if FEMA does not provide funding for PW 680 until CT DEEP issues a consistency determination there is no issue. In the instant case the CT DEEP issuance of a consistency determination now seems to turn on the final outcome of this pending appeal.

Initially, the Town sought State grant assistance for reconstruction of the Facility through the Connecticut Department of Housing (DOH). On 2/8/2016, the DOH Flood Management Certification application was submitted to CT DEEP. On 4/18/2016 the Town submitted its request for amendment of the obligated SOW of PW 680 to FEMA. Following notice to CT DEEP of its proposed revision of the SOW of PW 680, CT DEEP visited the Facility on 4/28/2016 and 5/1/2016. Thereafter, CT DEEP advised DOH on 5/12/2016 that it would not approve the DOH application based its belief the amended reconstruction plan for the Facility was inconsistent with the Coastal Management Act, State flood management regulations, and insufficiencies in the application. (Exhibit 6) The Town subsequently chose not to pursue DOH grant assistance.

As of 5/18/2016, relative to the consistency determination pertaining to FEMA grant assistance, CT DEEP had lingering concerns regarding a proposed rip-rap revetment, a proposed bulkhead, and NFIP compliance. On that date the Town met with the Grantee and CT DEEP and agreed to remove the bulkhead/revetment from its pending request for a change to the original PW 680 SOW and further provided information from its engineers that its pending request for the SOW change was compliant with NFIP requirements.

On 6/1/2016, relative to the Town’s need of a consistency determination for the revised SOW of PW 680, the Grantee and CT DEEP made a request of FEMA for technical assistance regarding NFIP compliance with respect to the Town’s then pending amended change of SOW request. Notwithstanding that CT DEEP mistakenly referred to the Town’s amended SOW as a repair rather than a replacement, CT DEEP advised FEMA that it believed that its prior concern with bulkhead/revetment matters were resolved, leaving only NFIP compliance for FEMA to provide technical assistance. Importantly, at the time of CT DEEP’s 6/1/2016 request for FEMA technical assistance CT DEEP was aware that FEMA had not approved the Town’s request for an amendment of the SOW of PW 680.

On 6/30/2016 the Town revised its original request to amend the SOW of PW 680 by eliminating the proposed bulkhead/revetment. Again, that satisfied CT DEEP, leaving only the CT DEEP uneasiness regarding FEMA’s ultimate determination regarding NFIP compliance – particularly the increased height of the grade, additional fill, and the free-of-obstruction requirements.

On 8/9/2016 FEMA’s Disaster Recovery and Floodplain Management and Insurance branches jointly responded to CT DEEP’s 6/1/2016 request for technical assistance by advising that relative to the proposed change to the original SOW “The design plans may fail to meet the requirements
of 44 CFR § 60.3", and “The applicant and grantee may have violated the terms and conditions of the Public Assistance project award”. (Exhibit 7, pgs. 8 and 9) emphasis added) Unfortunately, CT DEEP’s description of the revised SOW to be a repair instead of a continued replacement created analysis and discussion irrelevant to actual fact, which seemingly tended to mislead FEMA

Thus, the result of FEMA’s 8/9/2016 technical assistance was no assistance. FEMA made no determination related to the Town’s request for a change to the original SOW of PW 680 and did not clearly indicate what its final determination would be. Effectively, FEMA’s response precluded CT DEEP from rendering any determination relating to its primary concern – NFIP compliance.

On 10/17/2017, nearly one year after FEMA’s joint response to the Grantee and CT DEEP for technical assistance, the FEMA Floodplain Management and Insurance Branch Chief separately responded to the Grantee and CT DEEP request for technical assistance by declaring that the Town violated the minimum floodplain management criteria under 44 CFR 60.3(e)(5) and Technical Bulletin 5 by creating impermissible obstructions. These included installation of major quantities of fill under and around the Facility, constructing new retaining walls which create an obstruction, and constructing the foundation with a horizontal beam above the natural grade and below the BFE. However, the Floodplain Management and Insurance Branch Chief advised that no enforcement actions were being taken at that time and invited further discussion with the Town, Grantee and CT DEEP.

Thus, until the FEMA Disaster Recovery Manager’s 11/28/2018 final determination (nearly 2 ½ years from CT DEEP’s request for technical assistance) FEMA effectively prevented CT DEEP from rendering a compliance determination because CT DEEP did not know how FEMA would rule regarding NFIP compliance. Accordingly, FEMA’s assertion that the Town did not obtain a CT DEEP consistency determination was not the fault of the Town, it was the fault of FEMA.

Presently, CT DEEP has neither accepted nor denied the Town’s request for a consistency determination. While it recognizes that FEMA has recently rendered a negative determination regarding the Town’s request for a revision to the SOW of PW 680, it also realizes that there will be no final determination until the appeals process is exhausted. Accordingly, the fact that CT DEEP has not rendered a consistency determination is not a basis for denial of the Town’s request for a change to the SOW of PW 680. CT DEEP is awaiting the appeals process final outcome since it is not clear that FEMA is currently necessarily correct relative to NFIP compliance. Thus, the lack of a CT DEEP consistency determination in this case is not a singular basis to reject the Town’s request for the change to the SOW of PW 680. If it is determined that the proposed change to the SOW of PW 680 is acceptable, the consistency determination will likely issue. Moreover, the fact that construction is now completed will make no difference, provided that it conforms to the Town’s amended request for a change to the original SOW of PW 680.
Failure to Allow FEMA Opportunity to Complete Environmental and Historical Reviews

FEMA explained in its determination analysis (Exhibit 15, pg.10) that, “FEMA must consider and comply with a wide range of federal laws, regulations, and executive orders concerning environmental protection and historic preservation (“EHP”) when providing financial assistance for permanent work. These include, among others, NEPA, NHPA, Executive Order 11988, 44 C.F.R. pt. 9, and the Coastal Zone Management Act.”

FEMA further explained that under several appeals determinations, “When an applicant initiates or completes work on a permanent work project or a scope change on an approved project before FEMA is able to conduct the necessary EHP review, an applicant is generally ineligible for Public Assistance funding.” The Town notes that there is not an absolute statutory or regulatory prohibition against initiation or completion of work on a scope change to an approved project before FEMA is able to conduct any additional necessary EHP review.

Additionally, it should be noted that relative to changes in SOWs, FEMA Public Assistance Guide (FEMA 322, June 2007), states on page 139, “Changes in the scope of work may result in additional environmental/historic preservation compliance reviews and/or new permits.” Thus, FEMA policy expects that a requested SOW change may very well require additional environmental/historical preservation review. However, in the instant case, even if required, FEMA chose not to make any additional EHP reviews following the Town’s notification of the SOW modification, then later claimed it was denied the ability to do so.

Relative to completing environmental and historical reviews, the Town advises that both its engineering professionals engaged in the replacement of the Facility and the NFIP/CRS Coordinator confirmed that the project, as modified, met all environmental requirements.

Importantly, the Town observes that the obligated PW 680 contained among its 11/10/2015 internal comments the following statement:

“This project has been determined to be Categorically Excluded from the need to prepare either an Environmental Impact Statement or Environmental Assessment in accordance with 44 CFR Part 10.8(d)(2)(xv).” (Exhibit 1, pg.28)

44 CFR Part 10.8(d)(2)(xv) states:

“(d) Categorical Exclusions (CATEXs). CEQ regulations at 40 CFR 1508.4 provide for the categorical exclusions of actions which do not individually or cumulatively have a significant impact on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is required. Full implementation of this concept will help FEMA avoid unnecessary or duplicate effort and concentrate resources on significant environmental issues.

(2) List of exclusion categories. FEMA has determined that the following categories of actions have no significant effect on the human environment and
are, therefore, categorically excluded from the preparation of environmental impact statements and environmental assessments except where extraordinary circumstances as defined in paragraph (d)(5) of this section exist. If the action is of an emergency nature as described in §316 of the Stafford Act (42 U.S.C. 5159), it is statutorily excluded and noted with (SE).

(xv) Repair, reconstruction, restoration, elevation, retrofitting, upgrading to current codes and standards or replacement of any facility in a manner that substantially conforms to the pre-existing, design, function and location; (SE in part).

Relative to 44 CFR Part 10.8(d)(2)(xv) the Town asserts that its changes to the SOW of PW 680 were not significant changes to the reconstruction of the Facility. A portion of the Facility was retained, and the entirety of the Facility was replaced in the exact same footprint of the original Facility, thus conforming to the same design, function and location of the Facility both prior to its destruction and subsequent to the obligation of PW 680. Accordingly, the Town contends that, as with the obligation of PW 680, the subsequent changes continue to conform with 44 CFR Part 10.8(d)(2)(xv) and no environmental assessment or environmental impact statement was required.

Thus, based upon conformity with 44 CFR Part 10.8(d)(2)(xv) and the statements of the Town’s engineers, NFIP/CRS Coordinator, and SHPO the Town maintains that FEMA was not denied environmental or historic preservation review because none was required.

Importantly, the Town’s above assertion conforms to the Grantee’s beliefs, as previously expressed to FEMA which advised:

“It is the State’s belief that the requested change for this SOW relates primarily to the methodology Fairfield is using carrying out the restoration of this facility. Upon completion of this project Fairfield will have returned the facility substantially to pre-disaster condition at the same location with the same capacity and function. Fairfield continues to maintain that the project in its current form still represents a replacement of the facility as originally approved but incorporates the salvage value of portions of the original structure to reduce the overall project cost, reduce construction debris and minimize the environmental impact of the project.

The footprint of the current project is consistent with the footprint of the SOW already approved by FEMA, and the methodology being employed represents less of a threat to the surrounding environment than the methodology as involved in carrying out the project as approved in the original version of this PW.

This combined with the fact that the State Historic Preservation Officer (SHPO) has already been determined that the Pavilion was neither eligible for inclusion on
Town of Fairfield
1st Appeal – Project Worksheet 680

the National Register of Historic Places nor was it a contributing resource, indicates that there is no need for further EHP review." (Exhibit 10, pg. 4)

Thus, based upon the viewpoint of the Town’s professional engineers, its Floodplain Coordinator, the SHPO, the Grantee, and the regulatory exclusion under 44 CFR Part 10.8(d)(2)(xv) as recognized by FEMA under PW 680, the Town maintains that FEMA was not denied supplemental environmental and historical reviews resulting from construction occurring before FEMA had a chance to make such reviews. None were required.

Further, as stated above, FEMA policy expects that a requested SOW change may require additional FEMA environmental/historical preservation review upon notification of the requested SOW change. However, in the instant case, even if required to make additional EHP reviews, FEMA, after notification of the SOW change prior to the start of construction, chose not to make any additional EHP reviews then claimed it was denied the ability to do so.

Accordingly, for the above reasons the Town asserts that FEMA’s determination that it was denied the opportunity to complete environmental and historical reviews is incorrect as a singular reason for denying FEMA grant assistance for the SOW modification of PW 680.

**Conclusion**

The Town of Fairfield contends that its requested changes to PW 680 are reasonable and do not violate NFIP requirements. Further, the Town asserts that FEMA’s discretionary decision to analyze the Town’s requested changes to PW 680 rather than immediately terminate the project eligibility under 44 CFR 13.30(d)(1) and PW 680 effectively means that eligibility turns on conformity with NFIP regulations, minimization standards of 44 CFR Part 9, consistency review requirements under the Coastal Zone Management Act, and failure to provide FEMA a chance to review environmental and historic preservation requirements before the Town’s completion of work. The Town asserts that in accord with its above arguments it is in compliance with the legal requirements for each of these issues.

In consideration of the facts outlined above and proper application of the applicable regulations and policies, the Town of Fairfield requests a 1st appeal determination re-obligating PW 680 in the original amount of $4,340,054.11 adjusted to reflect actual close-out costs reflecting the SOW at issue, plus eligible administrative costs.
EXHIBITS

#1 – PW 680

#2 – FEMA Disaster Recovery 11-28-2018 Determination

#3 – 4-18-2016 Notice of Change

#4 – 6-30-2016 Modified Notice of Change

#5 – 6-28-2016 Fairfield NFIP/CRS Coordinator Correspondence

#6 – 6-1-2016 Grantee and CT DEEP Request for Technical Assistance

#7 – 8-9-2016 FEMA Response to Grantee and CT DEEP Request for Technical Assistance

#8 – 9-30-2016 FEMA RFI

#9 – 10-28-2016 Fairfield Response to FEMA RFI

#10 – 10-28-2016 Grantee Transmittal of Fairfield Response to FEMA RFI

#11 – 10-17-2017 FEMA Floodplain and Insurance Branch Response to Request for Technical Assistance
Town of Fairfield
1st Appeal – Project Worksheet 680

#12 – 12-12-2017 Fairfield Response to FEMA Floodplain and Insurance Branch Request for Additional Information

#13 – 11-28-2018 FEMA Floodplain and Insurance Final Determination

#14 – 11-28-2018 FEMA Disaster Recovery Final Determination

#15 – 11-28-2018 FEMA Disaster Recovery Final Determination Analysis

#16 – DeStefano & Chamberlain 1-18-2019 Response to FEMA Determination

#17 – 12-1-2017 DeStefano & Chamberlain Response to FEMA 10-17-2017 letter

#18 – Race Coastal Engineering 12-1-2017 Flood Analysis

# 19 – Race Coastal Engineering 1-18-2019 Response to FEMA Determination
January 5, 2016

Michael C. Tetreau
First Selectman
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

EXHIBIT

FEMA Disaster No. DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
FEMA Reimbursement: Category G – Large Project – Penfield Pavilion

Dear Mr. Tetreau:

You are hereby notified that FEMA has approved federal funding for the above-referenced Sub-grant application (Project Worksheet). As you know, the Presidential Disaster Declaration of October 30, 2012 entitled your town to a reimbursement for costs incurred for emergency relief and recovery assistance as a direct result of Hurricane Sandy.

This is considered a LARGE PROJECT since total eligible costs exceed FEMA’s Small Project threshold of $67,500. Important information pertaining to the administration of LARGE PROJECTS is provided below.

1. **Amount of Federal Reimbursement**

Federal reimbursement for this project is 75% of total eligible costs. See the attached P.5 Public Assistance Grant Summary form for FEMA’s estimate of total eligible costs and the 75% federal share. Because this is a LARGE PROJECT, federal reimbursements will be based on **ACTUAL COSTS**, provided the applicant adheres to the Scope of Work in the enclosed Project Worksheet. The federal share for this project is only an estimate. Actual costs may be higher or lower.

- The **ESTIMATED** total eligible amount for Project Worksheet # is $4,340,054.11.
- The **ESTIMATED** 75% Federal Share Reimbursement at this time is $3,255,040.58.
- The remaining 25% share ($1,085,013.53) is the applicant’s obligation.

2. **Changes In Scope of Work**

Project improvements outside the approved Scope of Work (IMPROVED PROJECTS) are done at the applicant’s expense and are not eligible for FEMA reimbursement. If it becomes necessary or desirable to deviate from the Scope of Work approved by FEMA in the enclosed Project Worksheet, you must immediately contact the State Public Assistance Coordinator (SPAC) Dana Conover at (860) 883-2904, fax (860) 256-0915 or dana.conover@ct.gov to obtain written approval to do so. **Failure to do so could jeopardize FEMA funding.**
3. **Reimbursement Requests**

You may request reimbursement for project costs from the Department of Emergency Services and Public Protection/Division of Emergency Management and Homeland Security (DESPP/DEMHS) when all work is completed or incrementally, as work is done and expenses are incurred. Contact the SPAC for guidance on reimbursement procedures when you are ready to submit a request for reimbursement.

4. **Progress Reports**

You must submit quarterly progress reports to DESPP/DEMHS, even if no progress has been made on this project, so we can provide required reports to FEMA. Use the attached “Public Assistance Progress Reports” for this purpose.

5. **Deadlines and Extensions**

FEMA regulations require applicants to complete emergency work (i.e. Categories A and B) within 6 months of the date of the Presidential declaration for your county. The State may grant extensions of up to 6 months based on extenuating circumstances. Permanent work (i.e. Categories C through G) must be completed within 18 months of the date of the Presidential declaration for your county.

The State can grant extensions of up to 30 months for extenuating circumstances or unusual project requirements beyond the applicant’s control. After 30 months, only FEMA can grant additional extensions. Please contact the SPAC as soon as the need for an extension becomes apparent, but in all cases not later than two weeks before the work completion deadline. Extensions must be requested and approved in writing, but please contact the SPAC before submitting an extension request.

Please take careful note of the following project completion deadline:

- Categories C, D, E, F and G are for Permanent Work. Permanent Work projects must be completed within 24 months of the date of the obligation – December 17, 2017.

6. **Closeout**

When this project is complete, please prepare all project documentation for final cost reconciliation (i.e. the difference between actual and estimated costs). All documentation for closeout must be accurate, complete and up to date. Failure to properly document project costs may result in loss of federal funding. When you have your project documentation, please notify the SPAC who will schedule a reconciliation meeting with FEMA, which will include a field inspection.

7. **Appeals**

You have the right to appeal any decision made by FEMA with regards to this project. All appeals must be in writing and made within 60 days of notification of the decision you are appealing. Contact the SPAC before filing an appeal.
8. Records and Audits

The federal program requires that you keep complete records and all supporting documentation for all approved work for three years from the date the last project was completed or from the date of receipt of final payment, whichever is later, as specified in 44 CFR 13.42 (b) and (c). The records should include how you apportioned your time for the completion of this project application. Under the Single Audit Act, please direct your auditor to CFDA 97.036 Public Assistance Grants. All projects are subject to monitoring, inspection and/or audit by DEMHS and FEMA, at their discretion.

Applicants expending over $500,000 in federal disaster assistance must file a copy of their A-133 audit with the DESPP/DEMHS Finance Office at 1111 Country Club Road, Middletown, CT 06457.

9. Questions and Additional Information

If you have any questions please contact Dana Conover, SPAC, at (860) 883-3904 or dana.conover@ct.gov or Mark Scerra, DPAC, at (860) 250-8285 or mark.scerra@ct.gov.

You may also refer to the following FEMA publications distributed at the Applicants Briefings for additional information on the Public Assistance Program:

- FEMA 323 - Applicant’s Handbook, March 2010
- FEMA 321 - Policy Digest, January 2008

These documents and other Public Assistance references are available on the FEMA website at http://www.fema.gov/government/grant/pa/policy.shtm

Sincerely,

[Signature]

William P. Shea
Deputy Commissioner

WPS/ms
Attachments

Account Reference:
FUND 12060 / DEPT DPS32990 / SID 22520 / PROGRAM 27580 / BUDGET REFERENCE 2013 / PROJECT EHS000000040176 / CHARTFIELD 1 190202
Federal Emergency Management Agency  
Public Assistance Grant Summary (P.5)  
Disaster: FEMA-4087-DR-CT

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TOTAL for report: (28 PWs) | 10,056,117.79 | 7,542,088.35 | 0.00 | 7,542,088.35 |
**Preparer Information**

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<tr>
<td>First Name</td>
<td>Frank</td>
</tr>
<tr>
<td>Middle Initial</td>
<td>P</td>
</tr>
<tr>
<td>Last Name</td>
<td>Mazzarella</td>
</tr>
<tr>
<td>Title</td>
<td>PAC CL</td>
</tr>
<tr>
<td>Agency/Organization Name</td>
<td>FEMA</td>
</tr>
<tr>
<td>Address 1</td>
<td>4 Griffin Road North</td>
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<tr>
<td>City</td>
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</tr>
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<tr>
<td>Zip</td>
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</tr>
<tr>
<td>Email</td>
<td><a href="mailto:demhs.pa@ct.gov">demhs.pa@ct.gov</a></td>
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**Is the application preparer the Point of Contact?** No

---

**Point of Contact Information**

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<tbody>
<tr>
<td>First Name</td>
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</tr>
<tr>
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<td>Michaelangelo</td>
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</tr>
<tr>
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<td>Town of Fairfield</td>
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<tr>
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</tr>
<tr>
<td>Phone</td>
<td>203-256-3010</td>
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<tr>
<td>Fax</td>
<td>203-256-3080</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:jmichaelangelo@town.fairfield.ct.us">jmichaelangelo@town.fairfield.ct.us</a></td>
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**Alternate Point of Contact Information**

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</tr>
<tr>
<td>Middle Initial</td>
<td>Bartlett</td>
</tr>
<tr>
<td>Last Name</td>
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</tr>
</tbody>
</table>
Title: Superintendent of Public Works
Agency/Organization: Town of Fairfield
Address 1: 725 Old Post Road
City: Fairfield
State: CT
ZIP: 06824
Phone: 203-256-3177
Fax: 203-256-3187
Email: sbarlett@town.fairfield.ct.us

Project Description:

Disaster Number: 4087
Pre-Application Number: PA-01-CT-4087-RPA-0002
Applicant ID: 001-26620-00
Applicant Name: FAIRFIELD (TOWN OF)
Subdivision: 
Project Number: BMFARG03
Standard Project Number/Title: 704 - Recreational Facility
Please Indicate the Project Type: Neither Alternate nor Improved
Application Title: BMFARG03- Penfield Pavilion
Category: G.RECREATIONAL OR OTHER
Percentage Work Completed?: 2.0%
As of Date: 07-30-2015

Comments:
3/14 The applicant has provided a “return to pre-disaster” repair estimate for the development of this version of the PW. This is to establish the appropriate scoping to determine potential mitigation, improved project or alternate project opportunities that are available. Once the replacement cost version is complete, the Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy. 7/30/15 As per 50/50 Policy, SAP9524.4 Repair vs. Replacement of a Facility under 44 CFR 206.226, this PW is being written as a replacement scope of work supported by the attached Repair/Replacement CEF, at a replacement value of 54.5%. Scope of Work is for replacement of the facility to pre-disaster footprint, form and function as per attached original building plans. If applicant wishes to alter the replacement scope of work in any way, they must first submit the changes in scope to the State/FEMA for approval, prior to construction. ***SFM*** Applicant will be drawing funds in (Month) (Year). The contract is anticipated to be accepted on (Month) (Year). Construction will begin shortly after the contract is signed. Construction is expected to be completed in (Month) (Year). The applicant must contact the State whenever the estimated final obligation date changes. Applicants must notify the Grantee writing (i.e., via email or letter) to request SA funding 30 days in advance of the projected date funds needed. No additional documentation is required to request obligation of funds. The eligible facility that this subgrant is based on is the Penfield Pavilion. All eligible work is defined as Replacement to Pre-Disaster Condition, as supported by the attached 50/50 Rule CEF value of 54.5%. If the applicant wishes to alter the scope of work, they must request an Improved Project or Alternate Project from the State/FEMA prior to construction. Return to Pre-Disaster Condition (Replacement) scope of work is based on the applicant provided original building plans, attached to this PW.

Attachments:

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**Comments**

The applicant has provided a “return to pre-disaster” repair estimate for the development of this version of the PW. This is to establish the appropriate case value to determine potential mitigation, improved project or alternate project opportunities that are available. Once the replacement cost version is completed, the Town of Fairfield will determine the most cost-effective method of mitigating the damages incurred during Hurricane Sandy. 7/30/15 As per he 50/50 Policy, SAP\$524.4 Repair vs. Replacement of a Facility under 44 CFR §206.226, this PW is being written as a replacement scope of work supported by the attached Repair/Replacement CEF, at a replacement value of 54.5%. Scope of Work is for replacement of the facility to pre-disaster footprint, form and function as per the original building plans. If applicant wishes to alter the replacement scope of work in any way, they must first submit the changes in scope to the State/FEMA for approval, prior to construction. The eligible facility that this subgrant is based on is the Penfield Pavilion. All eligible work is defined as Replacement to Pre-disaster Condition, as supported by the attached 50/50 Rule CEF value of 54.5%. If the applicant wishes to alter the scope of work, they must request an Improved Project or Alternate Project from the State/FEMA prior to construction. Return to Pre-Disaster Condition (Replacement) scope of work is based on the applicant provided original building plans, attached to this PW.

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Penfield Pavilion
323 Fairfield Beach Road
Fairfield
Fairfield
CT
06824
Yes
2.00 %
PA-01-CT-4087-PW-00680(0):
323 Fairfield Beach Road, Fairfield, CT 06824

PA-01-CT-4087-PW-00680(0):
Damage Description and Dimensions:
During the incident period starting October 27, 2012 and ending November 8, 2012, the Town of Fairfield suffered damages to the Penfield Pavilion due to the effects of Super Storm Sandy.

The Penfield Pavilion consists of a 16,756 square foot single story, wood/steel frame structure that has 10,811 square feet of wood decking surrounding it. The main structure consists of the east wing, a 10,000 square foot locker room area, without interior finishes (only bathroom/showers and changing cubicles/lockers) and composite decking for the floor. The central and west wing is 6,756 square foot of finished offices, concession stands, concession kitchen, separate event kitchen, lifeguard station, first-aid room, outdoor accessible garage/maintenance area, solar hot water panels and a banquet facility with ocean facing wall to wall, ceiling to floor glass curtain wall, for both indoor and outdoor dining (on the deck). The building is a one-story light-framed wood construction for both wings, and a steel column framed structure supporting roof timber trusses for the central open two story high Gathering Room. The building floor plan, which varies in width, occupies an area with overall dimensions of approximately 85 feet by 325 feet. The outside decking is standard deck construction of light lumber elements (planks, joists & beams) and composite decking, with multiple ramp and stair access, all supported on concrete piers.

The Albaine report indicated that the storm surge from Super Storm Sandy breached over and around a concrete/stone revetment wall and a wooden bulkhead system constructed to protect the pavilion. The breach allowed the surge water to flow under the building resulting in significant scouring, causing undermining of the buildings foundations. The bulkhead was built down to 4 feet below grade, which is the usual amount of sand scouring seen after big storms. In order to obtain an accurate assessment of the damages caused by the event, the applicant retained J.M. Albaine Engineering and (RACE) Roberge Associates Coastal Engineers, LLC, to study and analyze the damages, and to prepare a detailed damage description with dimensions, as well as a repair cost estimate using local pricing.

The storm eroded several critical footings, locations illustrated in the blue highlighted area on drawing A-1 (Reference "A-1.pdf"). The scour, caused by the force of storm surge waters, caused significant damages to piers, decking, floors, walls, roof and ramps. Several footings located under the Gathering Room and a section of the West Wing were completely undermined, losing all contact bearing with the soil, causing warping of the floor in this room, and roof supports out of plumb. Also one of the grade beams was broken.

Engineer reported damages (Reference "Saugatuck Construction Group Estimate.pdf") consists of:
- East Wing
  o Foundation system
  Several footings were damaged by excessive scour, as shown in blue highlight area on drawing. A-1 (Reference "A-1.pdf"). Most of the observed damage is located on the south end on the deck area.
  o Roof Framing
  The roof covering the outdoor deck has been pulled in the south-east direction (mostly eastward) caused by a combination of the footing failure and wave action in this area.
  o Floor Framing
  The decking boards for the outdoor deck are distorted and warped, and will need to be replaced or reinstalled for those components that were not damaged beyond repair.
- Central area and Gathering Room
  o Foundation system
  The majority of footings located under the Gathering Room were completely undermined, losing all contact bearing with the soil. Settlement of the footing from loss of soil support caused warping of the floor in this room, and misalignment of the roof support. This also caused one of the grade beams to break. The foundation failure under the Gathering Room has distorted the room, where the "squaring" (the dimensions of all sides being parallel) was found with a warp in the south west direction. Moreover, it has been observed that there is a differential settlement of approximately 8 inches (from north to south), rendering the floor of this room out of level.

The foundation failure under this area of the complex is the cause of all observed damages.
o Roof Framing:
The main structural roof consists of deck boards (2" x 6"), purlins (6 "x10 ") and timber trusses (2" x 12"). The trusses are supported on steel columns, wide flanges W 10 x 68 (10-in deep, weighing 68 pounds per foot) and W10 x 100 (nominal 10" deep, weighing 103 lb./ft.). The roof structure has displaced and twisted to some degree due to the downward differential settlement of the footings in this area. Visual inspection indicates that the roof timber trusses are in satisfactory condition, although they have rolled (rotated).

o Floor Framing:
The existing floor framing is made of 2" x 12" joists spanning between main "Glue-Lam" beams. The floor deck is 5/4" tongue-&-groove decking. Several "Glue-Lam" beams were found damaged beyond repair, due to the excessive loss of support from footing scour action.
In the area of the Gathering Room, the decking and finish floor are extensively damaged, and will require complete removal and reconstruction.

The adjacent areas of the gathering room, such as office, bathrooms, storage, main kitchen, and concession/kitchen may require partial rebuilding of floors, especially in those directly affected by failure of the footings below.

o Wall Framing:
The interior walls designed as partition, non-bearing walls, will need to be resurfaced once the building is positioned on the new foundation system. Shear walls in the Gathering Room were rebuilt after Irene.

* West Wing:
- The foundation failure under this wing is extensive, and many of the findings and recommendations described for the Gathering Room wing will be applicable for this part of the building too.

Furthermore, all the outdoor decking with the required ramps will be re-built since the damage to the outdoor decks are significant.

PA-01-CT-4087-PW-00680(0):
Synopsis of Project Development:
During the initial phase of this project it was agreed between FEMA and Fairfield that an engineer would be retained to provide a definitive damage description and recommended scope of work to restore the pavilion to its pre-disaster condition. This was based on site visits and two meetings with the applicant, their insurance provider and engineers. On 2/6/13 the engineering contract was awarded to Albaine Engineering. On 7/23/14 FEMA was provided the recommended scope of work prepared by Saugatuck Construction Group, recommended project repair cost of $3,655,018. On 9/25/14 Fairfield requested that the application of 44 CFR 206.226(f) be used to determine if the Fairfield Pavilion is eligible for repair or replacement; (also known as the 50 Percent Rule). On 9/26/14 Witt, (consultant retained by Fairfield and authorized as their agent), submitted their recommended repair versus replacement CEF calculation of 69%. During the next five months FEMA, DBMHS Fairfield and Witt worked extensively on the Witt provided repair/replacement CEF with FEMA requesting additional documentation to support the analysis. In March of 2015 FEMA contracted a technical assistance coordinator to assist in the formulation of the final repair versus replacement CEF. On 7/17/2015, all parties agreed on the final 50/50 CEF calculation of 54.5% (referenced "Penfield Pavilion Final CEF.pdf"). This resulted in a determination of eligibility for replacement. This PW represents replacement, back to pre-disaster footprint, form and function, as per the approved CEF scope of work. All revisions listed occurred prior to initial obligation (Version 0).

SCOPE OF WORK:
****WORK COMPLETED: ****
The applicant has contracted with J.M Albaine Engineering to provide labor and all else necessary for the architectural design and structural analysis for the Penfield Pavilion foundation repair, including raising, building repair and bulkhead modifications. Work completed to date includes the following:
3. Architectural Design/Drawings/Inspection PCI.
5. Conceptual designs in order to develop the cost estimate.
6. A new site plan.
7. Designed 3-D models of the new facility and site plan.
8. Provided the insurance carrier with an estimated construction cost.
9. Developed construction estimates for repairing the building and leaving it in its current place and for moving it back into the parking lot area.
10. Meetings/conferences/printing/mailing and other functions.

Proof of payment for actual costs for the above Work Completed have not been provided or directly captured in this PW. However, scope of work and costs are reasonably addressed in the contingency factors of the Replacement CEF. Actual eligible costs will be captured at closeout.
The Town installed temporary footing underpinning timbers ("railroad ties") under the major column footings to prevent any further destabilization. This was completed on Nov. 3rd, 2012. The cost for the temporary shoring emergency work is captured in Cat B PW 663.
SCOPE OF WORK FOR REPAIR TO PRE-DISASTER:

*****WORK TO BE COMPLETED*****

FINAL DETERMINATION FOR 50/50 RULING IS REPLACEMENT

This Repair Scope of Work was provided by the applicant. An estimate is in the form of a line item estimate completed by Saugatuck Construction Group, a contractor familiar with the pavilion project. This Estimate includes applicable costs, by detailed line items, necessary to return the facility back to pre-disaster condition. This Saugatuck Group Estimate also includes contingency costs. These contingency costs were not utilized in the formulation of this PW. All other estimated repair to pre-disaster costs were found to be eligible and included in the formulation of this PW.

The Saugatuck estimate (without contingencies) of $2,313,978.85 was entered into the FEMA CEF as “Part A Uncompleted Permanent Total”. Results of the CEF estimate, adding all pertinent contingencies resulted in a total estimate of $4,128,888, to return to pre-disaster condition. (Reference attachment “Repair Scope of Work”)

Saugatuck Group Repair Costs subtotal $2,313,978.85
TOTAL REPAIR CEF ESTIMATE (including contingencies) RETURN TO PRE-DISASTER CONDITION $4,128,888

*****50 % RULE *****

The applicant did request the calculation of the 50% rule for this project.

FEMA will restore an eligible facility to its pre-disaster design. If the repair cost divided by the replacement cost is less than 50% then only the repair cost is eligible. If the repair cost divided by the replacement cost is greater than 50% then the repair cost is eligible. The determination of repair cost value for the 50% rule, as per “PAP 9524.4 Repair vs. Replacement of a Facility under 44 CFR §206.226, includes ONLY those repairs, including non-emergency mold remediation, associated with the damaged components and the codes and standards that apply to the repair of those damaged components. This cost DOES NOT include upgrades of other components triggered by codes and standards, design, demolition of the entire facility, site work, or applicable project management costs, even though such costs may be eligible for Public Assistance. The cost of contents and HAZARD MITIGATION measures are not included in the calculation of the 50% repair costs.

The 50% replacement cost includes the costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards. This cost DOES NOT INCLUDE demolition, site work and applicable project management costs.

The applicant provided “Repair” Estimate was validated as reasonable by comparing local and RS Means construction cost data. With the removal of costs not utilized per policy for the 50% determination, a final “Repair” Cost for the 50/50 determination is valued at $2,090,442.85.

A CEF was produced to determine the “Replacement” cost. This was calculated with details from the applicant provided original construction plans of the East and West wing projects (Reference multiple attachments of original plans, file titles proceeded by “plans”). The resulting CEF, with the appropriate site costs removed, but including costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards resulted in a 50/50 replacement value of $3,833,932.60.

The 50/50 calculation result of $2,090,442.85/$3,833,932.60 or 54.5% supports eligibility of Replacement.

- The Replacement Estimate was derived utilizing RS Means with an initial Square Foot model type of “Club, Country, Wood Shingles/Wood Frame”, 12 foot Story Height, 16,765 SF, in Norwalk CT, 2015 Quarter 2, using union wages, supplemented with “Building Construction”, “Site Work and Landscaping”, and “Assemblies” cost data. The Square Foot Model cost list provides a base construction cost plus allowances for Contractor overhead & profit, A/E fees. The CEF was further developed based on substitutions and additions to reflect the existing facility plans to a reasonable degree. All applicable Codes and Standards included.

The CEF provides General or Prime Contractor overhead and profit in Part B.2 (general site supervision and coordination - fixed at 4.25%), and Parts D.1 (G.C. home office overhead - fixed at 7.7%), D.2 (G.C. project insurance and bonds - fixed at 3.3%), and D.3 (G.C. profit - 4% for construction of new building, and 10% for site work and special engineering services based on sliding scale). The CEF Provides base A/E design fees in Part H.2 (9.5% for design of new building, and 23% for demolition bid documents). These factors are included in the CEF estimate. The CEF also includes a Design Phase Contingency, Part C.1 for costs associated with protection of the existing parking area in front of the pavilion, and the bulkhead wall. Part D.3 contingency for General contractor profit of 4% for replacement and 10% for demo and geotechnical exploration for pile design (aggregate of 5.04%) is included in this estimate.

The CEF includes an escalation of 2.8% based on a project schedule of 16 months to the mid-point of construction, and a monthly escalation factor of 0.176%. The monthly escalation factor was computed.

The CEF also includes applicant's cost to manage both the design (H.1 - fixed at 1%) and construction (H.2 - 3% for building construction, and 6% for demolition, geotechnical engineering, aggregate 3.13%) phases of the project.

Cost included in CEF Parts B.1 for site safety, utilities and quality control, and submittal; Part C.2 constructability, which is not applicable to new work, and Part C.3 for contractor access, storage and staging are already included in the model cost allowance, therefore not duplicated. CEF Part C.4, adjusts the estimated project cost to account for economies of scale. As the Square Foot models estimate are based on project specific dimensions, Part C.4 is not use in the estimate.

Additional construction costs not eligible in the formulation/calculation of the 50% Rule, are eligible in conjunction with an eligible replacement (Reference attached DAP 9524.4). These are costs for demolition, disposal, geotechnical surveys (as per code for foundations) Site work, Project Management, Architectural, Engineering, Financing, Legal Fees, Contests, Hazard mitigation measures, and Other pre-/post-construction expenses. Note that Contractor Overhead & Profit, A/E Fees and Site Supervision are already included in the costs derived from the Base Model calculation, as stated above. With the addition of these remaining eligible costs, the final Replacement PW Estimate Total is $6,585,222.00 (Reference “Penfield Pavilion Final CEF.pdf”).

ELIGIBLE REPLACEMENT COSTS
FEMA will restore an eligible facility to its pre-disaster design. Replacement Cost includes the costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards. This includes demolition, disposal, and elevation above new FEMA flood height. FEMA will not fund additional capacity necessary due to increased population or use, even if required by code (Reference attachment “DAP9524.4.pdf”).

Codes and Standard compliance would be warranted for the foundation system costs to raise the lowest horizontal member above the Base Flood Elevation (BFE) of 13 (VE Zone), (an area inundated by 1% annual chance flooding with velocity hazard/wave action). The Town currently does not have an ordinance for freeboard requirements. All conversations and recommendations from the Town consultants was a freeboard of 2 feet. The existing structure had the (Finished Floor Elevation) FFE at 12 or 1 foot above the BFE 11 (AE Zone) (an area inundated by 1% annual chance flooding, for which BFEs have been determined.). The current distance from FFE to the lowest horizontal member is 2.5 to 3 feet, dependent of exact framing dimensions. The new finish floor elevation would be 15.5a minimum based on a BFE of 13 without freeboard.

Note: All original plans and specifications for the pre-disaster design of the “East” and “West” Wing phases of the Penfield Pavilion are attached to this PW (Reference multiple attachments of original plans, file names proceed by “plan”).

***PROJECT NOTES***
PREVIOUS DAMAGE:
The facility had sustained damage from a March 2010 storm resulting in a solid wood skirting being built around the bottom of the structure to fully enclose the foundation system after significant storm surge had run underneath the structure. Damage was discovered in several areas of the asphalt roof shingles during the March 2010 storm (DR. 1504, PW 00039). There was a scouring away of significant amounts of sand due to Tropical Storm Irene August 2011, (DR 4023, PW 01340).

After Tropical Storm Irene, a concrete block revetment was added between the structure and the Long Island Sound waterfront. In February 2012 construction began on a wooden bulkhead on the Long Island Sound side of the structure that was situated between the concrete revetment and the Pavilion. At each stair case and ramp entrance, “bulkhead gates” were put in for access to the beach.

MITIGATION MEASURES:
Cannot be applied to replacement buildings. Since new construction will be to current codes and standards, which are intended to ensure structural integrity for local conditions, mitigation funding applies only to building repairs, which generally are not covered by codes and standards.

INSURANCE:
The applicant has insurance on this facility, however it is not issued through the NFIP. There is a $500,000 deductible with this policy. A copy of this policy is with the FEMA Insurance Specialist and on file at the FO. Bryan McSweeney PAC CL August 6, 2013.

INSURANCE SPECIALIST STATEMENT:
No NFIP coverage was in place at time of event.
The Stafford Act includes specific provisions for insurance of facilities located in floodplains. Most property insurance does not cover flood damage; instead, a separate flood insurance policy must be purchased to obtain this coverage.

Section 406(d) of the Stafford Act mandates a special reduction in the amount of Public Assistance
funding for a facility (facility meaning each separate building or structure insurable under NFIP Coverage A - Buildings) that is:

- Insurable under the NFIP;
- Located in a Special Flood Hazard Area, as shown on a FIRMette; and
- Damaged by flood waters.

For insurable facilities that do not have flood insurance or carry inadequate flood insurance, FEMA will reduce eligible project costs by the lesser of:

- The maximum amount of insurance proceeds that could have been obtained from a standard NFIP flood insurance policy; or
- The value of the facility at the time of the disaster.

After the reduction, FEMA assistance is available for:

- Reasonable deductible (limited to minimum available under NFIP), but only for the first disaster and not for subsequent disasters;
- Items not covered by the NFIP; and damage in excess of limits of a standard NFIP policy.

As a condition for receiving Public Assistance for permanent work, an applicant must obtain and maintain insurance to cover that facility for the hazard that caused the damage. Such coverage must, at a minimum, be in the amount of the estimated eligible damages for that structure prior to any reduction. The costs of Section 406 hazard mitigation measures are included in the amount of insurance required. If the requirement to purchase all insurance is not met, FEMA will not provide assistance for damage sustained in the current or a future disaster of the same type. If the applicant does not maintain all required insurance, FEMA will not provide any assistance for that facility in future disasters of the same type. An applicant is exempt from this requirement for:

- Projects where the eligible damage (before any reductions) is less than $5,000; or
- Facilities for which, in the determination of the State insurance commissioner, the type and/or extent of insurance being required by FEMA is not reasonable. (This exemption does not apply to facilities insurable under the NFIP because insurance is both available and reasonable.)

DIRECT ADMINISTRATIVE COSTS:
The subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to the administration of this PA project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates. At this time the applicant has not supplied FEMA with any documentation that supports these costs. At close-out these documents will be requested in order to reconcile associated costs.

WORK TO BE COMPLETED:
Upon completion, this site will be returned to its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards. Acquiring all necessary Federal, State, and local permits is required for Federal Funding. Noncompliance with this requirement may jeopardize the receipt of Federal funds.

PROCUREMENT:
The Applicant has been advised by FEMA PAC and/or Project Specialist that in the seeking of proposals and letting of contracts for eligible work, the Applicant must comply with its local, State and/or Federal procurement laws, regulations, and procedures.

RECORD RETENTION:
As described in 44 CFR 13.42 (2)(b), (3)(c), Subgrantee must maintain all work-related records for a period of three (3) years from Subgrantee closure (final payment), all records relative this project worksheet are subject to examination and audit by the State, FEMA and the Comptroller General of the United States and must reflect work related to disaster specific costs.

LARGE PROJECT COST INCREASE:
Applicant shall notify the CT Department of Emergency Services and Public Protection (DESP), Division of Emergency Management and Homeland Security (DEHMS) of any significant cost increase in the approved scope of work. Contact: DEHMS Emergency Management Office at (860) 256-0809 or by E-Mail at demh.s.pa@ct.gov

CHANGE IN SCOPE:
Applicant shall notify the CT Department of Emergency Services and Public Protection (DESP), Division of Emergency Management and Homeland Security (DEHMS) prior to initiating any work that changes the scope of approved work as given in this sub-grant application. Contact: DEHMS Emergency Management Office at (860) 256-0809 or by E-Mail at demh.s.pa@ct.gov

FORCE ACCOUNT LABOR:
The Town of Fairfield Director of Public Works and Town Engineer worked a total of 233.3 hours performing Project Management directly pertaining to the process of repairing the Pavilion from the damages incurred from Storm Sandy.
DIRECT ADMINISTRATIVE COSTS:
The Town of Fairfield Director of Public Works and the Town Engineer worked a total of 52.8 hours directly related to the development of this PW in accordance with FEMA 9525.9.
The applicant utilized the services of Witt O'Brien's as a consultant in preparing their PA Grant applications. A claim has been provided, to date, for an additional 229.5 ($35,158.21) consultant hours documented as eligible work directly related to this project, as per FEMA 9525.9. These hours are recognized, but not included into the final total pending further review.

INSURANCE NOTE:
Applicant provided Insurance settlement Information. As per Loss Statement from CIRMA dated August 25, 2014, "CIRMA provides first party Property Coverage to the Town of Fairfield and Fairfield Board of Education for those claims arising July 1, 2012 through June 30, 2013, subject to a $100,000.00 deductible for property coverage and $500,000.00 deductible for each building damaged within a designated flood zone. Our investigation indicates that The Penfield Pavilion which is located at 323 Fairfield Beach Road is in a designated flood zone VE. As we are aware the damage to the Penfield Pavilion was that of storm surge, therefore the $500,000.00 deductible would apply. CIRMA provided the Town of Fairfield with a payment of $1,750,000.00 towards the Property loss ($2,250,000.00 physical building damage less $500k deductible)" Also provided is a copy of the "Sworn Statement in Proof of Loss", signed by the First Selectman of Fairfield accepting the insurance settlement based on a damage value due to Storm Sandy at Penfield Pavilion for a total dollar amount of $2,250,000.

STRATEGIC FUNDS MANAGEMENT
The purpose of Strategic Funds Management (SFM) is to provide a with the ability to obligate funding consistent with the Sub-Grantee’s project schedule and financial requirements while enhancing the management and use of Disaster Relief Funds (DRF).

Applicant will be drawing funds in (Month) (Year). The contract is anticipated to be accepted on (Month) (Year). Construction will begin shortly after the contract is signed. Construction is expected to be completed in (Month) (Year). The applicant must contact the State whenever the estimated final obligation date changes. Applicants must notify the Grantee in writing (i.e., via email or letter) to request SA funding 30 days in advance of the projected date funds needed. No additional documentation is required to request obligation of funds. The eligible facility that this subgrant is based on is the Penfield Pavilion. All eligible work is defined as Replacement to Pre-disaster Condition, as supported by the attached 50/50 Rule CEF value of 54.3%. If the applicant wishes to alter the scope of work, they must request an Improved Project or Alternate Project from the State/FEMA prior to construction. Return to Pre-Disaster Condition scope of work is based on the applicant provided original building plans, attached to this PW.

Final Reviewer Comments:
We have confirmed with the Grantee and/or Applicant that this project is not subject to SFM and they will begin using the funds within the next 180 days.
To summarize the Scope of Work of the project: The existing building will be razed and properly disposed of. The site will be groomed and prepped for the construction of a new pavilion, built to the specs provided by the original architect. The new pavilion will be built in the existing footprint and elevated per Codes and Standards compliance. The new foundation system will be raised so the lowest horizontal member will be 2.5 feet above the Base Flood Elevation (BFE) of 13 (VE Zone), to an elevation of 15.5 feet. The existing structure had the (Finished Floor Elevation) FFE at 12 or 1 foot above the BFE 11 (AB Zone) per the Flood Insurance Rate Map valid at the time.

Note: The current Scope of Work is written as a replacement.
If applicant wishes to alter the approved scope of work, they must first formally request approval for changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.

Subgrantees shall request approval for changes to the approved scope of work from FEMA before they perform the work. The revised scope of work may result in additional environmental/historic preservation compliance reviews and/or new permits.

<table>
<thead>
<tr>
<th>Hazard Mitigation Proposal</th>
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</thead>
<tbody>
<tr>
<td>* Is effective mitigation feasible on this site?</td>
</tr>
<tr>
<td>Even answered Yes to the above question, the next question is required</td>
</tr>
<tr>
<td>Will mitigation be performed on this site?</td>
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<tr>
<td>Even answered Yes to the above question, the next question is required</td>
</tr>
<tr>
<td>Do you wish to attach a Hazard Mitigation Proposal?</td>
</tr>
<tr>
<td>Even answered Yes to the above question, the next two questions are required</td>
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<tr>
<td>Please provide the Scope of Work for the estimate: (maximum 4000 characters)</td>
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Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost? | No
---|---

**GIS Coordinates**

- Latitude: 41.134787
- Longitude: -73.241356

**Project Location**

- Penfield Pavilion

**Special Considerations**

1. Does the damaged facility or item of work have insurance coverage and/or is it an insurable risk (e.g., buildings, equipment, vehicles, etc.)? | Yes
2. Is the damaged facility located within a floodplain or coastal high hazard area and/or does it have an impact on a floodplain or wetland? | Yes
3. Is the damaged facility or item of work located within or adjacent to a Coastal Barrier Resource System Unit or an Otherwise Protected Area? | No
4. Will the proposed facility repairs/reconstruction change the pre-disaster conditions (e.g., footprint, material, location, capacity, use of function)? | No

If you would like to make any comments, please enter them below.

(maximum 4000 characters)

Applicant has requested a 50/50 determination. This has been supported by the attached Repair/Replacement CEF value of 54.5%. Replacement Projects/New Construction are not eligible for HMP.

5. Does the applicant have a hazard mitigation proposal or would the applicant like technical assistance for a hazard mitigation proposal? | No
6. Is the damaged facility on the National Register of Historic Places or the state historic listing? Is it older than 50 years? Are there more, similar buildings near the site? | No
7. Are there any pristine or undisturbed areas on, or near, the project site? Are there large tracts of forestland? | Yes

If you would like to make any comments, please enter them below.

(maximum 4000 characters)

This facility is located on a beach.

8. Are there any hazardous materials at or adjacent to the damaged facility and/or item of work? | No
9. Are there any other environmental or controversial issues associated with the damaged facility and/or item of work? | No

**Attachments**

<table>
<thead>
<tr>
<th>User</th>
<th>Date</th>
<th>Document Type</th>
<th>Description</th>
<th>Hand Copy File Reference</th>
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<td>Floodplain</td>
<td>FIRM JULY 2013</td>
<td>Revised FIRM09001C0438G_7_14_15.pdf(279.40 kb)</td>
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**For Category C, D, E, F, and G Projects only**

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<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>Is effective mitigation feasible on this project?</td>
<td>Yes</td>
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<tr>
<td>If you answered Yes to the above question, the next question is required</td>
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<tr>
<td>Will mitigation be performed on any sites in this project?</td>
<td>Yes</td>
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<tr>
<td>If you answered Yes to the above question, the next question is required</td>
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<tr>
<td>Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?</td>
<td>No</td>
</tr>
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**Comments**

7/30/15 PW rewritten as replacement supported by a Repair/Replacement CEF value of 54.5%. HMP not eligible for Replacement/New Construction projects as per FEMA policy.

**Attachments**

<table>
<thead>
<tr>
<th>Sequence Code</th>
<th>Material and/or Description</th>
<th>Unit Quantity/Measure</th>
<th>Unit Price</th>
<th>Subgrant Budget Class Type</th>
<th>Cost Estimate Action</th>
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**Cost Estimate Format**

(Preferred): Replace in Kind!

**Version 0**
Work Completed
1 2991 DIRECT ADMINISTRATIVE COSTS (SUBGRANTEE) 1 LS $6,832.11 PERSONNEL Work Completed $6,832.11
2 2992 **** WITI O'BRIENS CLAIMED DAC **** 1 LS $35,158.21 CONTRACTUAL Work Completed $35,158.21
3 2992 **** WITI O'BRIENS DAC PENDING FURTHER REVIEW**** 1 LS $35,158.21 CONTRACTUAL Work Completed $35,158.21

Work To Be Completed
4 9890 CEF COST ESTIMATE 1 LS $6,583,222.00 CONTRACTUAL Work To Be Completed $6,583,222.00

Total Cost: $6,590,054.11

Insurance Adjustments (Deductibles, Proceeds and Settlements) - 5900/5901

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<td>5904</td>
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Total Cost: $7,250,000.00

Total Cost Estimate: $4,340,054.11

Comments

3/14 The applicant has provided a "return to pre-disaster" repair estimate for the development of this version of the PW. This is to establish the appropriate use of funds to determine potential mitigation, improved project or alternate project opportunities that are available. Once the completed version is completed, the Town of Fairfield will determine the most cost-effective method of mitigating the damages incurred during Hurricane Sandy. 7/30/15 As per the 50/50 Policy, SAP9524.4 Repair vs. Replacement of a Facility under 44 CFR §206.226, this PW is being written as a replacement scope of work supported by the attached Repair/Replacement CEF, at a replacement value of $4.5%. Scope of Work is for replacement of the facility to pre-disaster footprint, form and function as per the original building plans. If applicant wishes to alter the replacement scope of work in any way, they must first submit the changes in scope to the State/FEMA for approval, prior to construction. Applicant will be drawing funds in (Month) (Year). The contract is anticipated to be accepted on (Month) (Year). Construction will begin shortly after the contract is signed. Construction is expected to be completed in (Month) (Year). The applicant must notify the State whenever the estimated final obligation date changes. Applicants must notify the Grantee in writing (i.e., via email or letter) to request SA funding 30 days in advance of the desired date funds needed. No additional documentation is required to equate obligation of funds. The eligible facility that this subgrant is based on is the Peninsula Pavilion. All eligible work is defined as Replacement to Pre-Disaster Condition, as supported by the attached 50/50 Rule CEF value of 54.5%. If the applicant wishes to alter the scope of work, they must request an improved Project or Alternate Project from the State/FEMA prior to construction. Return to Pre-Disaster Condition (Replacement scope) of work is based on the applicant provided original building plans, attached to this PW. INSURANCE REVIEW Insurance review to be completed during review process. Appropriate Insurance adjustments will be addressed at that time. ENGINEERING COSTS TO DATE Original estimate for engineering costs of $117,705 was reduced to zero dollars. Actual costs derived from applicant provided JM Albaine Engineering INV0 1-71017 for $45,367.21 and Change Order JMA-13-002 for $18,350.00. These costs are captured within the CEF Scope of Work. Actual costs will be captured at closeout when proof of payment is provided.

Attachments

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Existing Insurance Information
## Insurance Adjustments (Deductibles, Proceeds and Settlements) - 5900/5901

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**Total Cost:** $2,250,000.00

**Comments**

The applicants policy is on file with the Windsor, CT JFO. The applicant has insurance that contains a $500,000 deductible. This policy is not issued through the NFIP. Insurance Review Insurance review to be completed during review process. Appropriate insurance adjustments will be addressed at that time. Applicant received a settlement of $2,250,000 less $500,000 deductible for a total of $1,750,000. Applicant provided Insurance settlement information. As per Loss Statement from CIRMA dated August 25, 2014, “CIRMA provides first party Property Coverage to the Town of Fairfield and Fairfield Board of Education for those claims arising July 1, 2012 through June 30, 2013, subject to a $100,000 deductible for property coverage and $500,000 deductible for each building damaged within a designated flood zone. Our investigation indicates that The Penfield Pavilion which is located at 123 Fairfield Beach Road is in a designated flood zone. As we are aware the damage to the Penfield Pavilion was that of storm surge, therefore the $500,000 deductible would apply. CIRMA provided the Town of Fairfield with a payment of $1,750,000.00 (copy in check in “proof of loss” attachment) towards the Property loss ($2,250,000.00 building damage less $500,000 deductible). Also provided is a copy of the “Sworn Statement of Loss”, signed by the First Selectman of Fairfield accepting the insurance settlement based on a damage value due to Storm Sandy at Penfield Pavilion for a total dollar amount of $2,250,000.

**Attachments**

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**Comments and Attachments**

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<tr>
<td>Project Description</td>
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<td>[PW 680 Appendix B Heller Johansen 102402 Report Dated May 05 2013.pdf] (09-04-2014)</td>
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Damage Facilities

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Insurance Information

THE APPLICANTS POLICY IS ON FILE WITH THE WINDSOR, CT JFO. The applicant has insurance that contains a $500,000 deductible. This policy is not issued through the NFIP. INSURANCE REVIEW Insurance review to be completed during review process. Appropriate Insurance adjustments will be addressed at that time. Applicant received a settlement of $2,250,000 less $500,000 deductible for a total of $1,750,000. Applicant provided Insurance settlement Information. As per Loss Statement from CIRMA dated August 25, 2014, “CIRMA provides first party Property Coverage to the Town of Fairfield and Fairfield Board of Education for those claims arising July 1, 2012 through June 30, 2013, subject to a $100,000.00 deductible for property coverage and $500,000.00 deductible for each building damaged within a designated flood zone. Our investigation indicates that The Penfield Pavilion which is located at 323 Fairfield Beach Road is in a designated flood zone VE. As we are aware the damage to the Penfield Pavilion was that of storm surge, therefore the $500,000.00 deductible would apply. CIRMA provided the Town of Fairfield with a payment of $1,750,000.00 (copy of check in "proof of loss" attachment) towards the Property loss ($2,250,000.00 building damage less $500,000 deductible).” Also provided is a copy of the “Sworn Statement in Proof of Loss”, signed by the First Selectman of Fairfield accepting the Insurance settlement based on a damage value due to Storm Sandy at Penfield Pavilion for a total dollar amount of $2,250,000.

Application Level

****TIME EXTENSION to 10/30/2016**** Mr. Michael C. Tetreau, First Selectman, Town of Fairfield, 725 Old Post Road, Fairfield, CT 06824 26 June 2015 RE: Approval of the Town of Fairfield’s 2nd Request for an extension of the Penfield Pavilion Restoration Project, DR:4087-CT PW-680 Dear Selectman Tetreau: I am in receipt of an e-mail dated 26 June 2015 requesting a second time extension for the Town of Fairfield to complete PW-680, Penfield Pavilion Restoration Project, associated with DR: 4087-CT. Because of the reasons outlined in your e-mail, and the time necessary to complete this work, your request for an

2015)
DAP9524_4.pdf (07-20-2015)
Penfield Pavilion final CEF.pdf (07-20-2015)
Penfield SF Model thru Estimator.pdf (07-20-2015)
Saugatuck Construction Group Estimate.pdf (07-20-2015)

2013)
Insurance Statement by Gina Wilson.pdf (07-30-2013)
Municom Claims Service Meme for Jul29 Meeting.pdf (07-30-2013)
 PENFIELD PAVILION PROOF OF LOSS SETTLEMENT.pdf (09-03-2014)
Fairfield Loss Statement-0089829-PW680 Penfield Pavilion.docx (09-03-2014)

2014)
Fairfield 4087 pw 680 ext.pdf (03-28-2014)
Fairfield 4087 pw 680 2nd ext.pdf (06-26-2015)
Extension is hereby granted. The extension will be for an additional Sixteen, (16) months making your new deadline for completion 30 October 2016. You can reach me at the below phone number if I can be of further assistance: Dana Conover, State of Connecticut, PA Coordinator, (860) 883-3904.

***TIME EXTENSION*** 27 March 2014 RE: Approval of the Town of Fairfield's Request for an extension of the Penfield Pavilion Restoration Project, DR-4087-CT PW-680 Dear Selectman Tetreau: I am in receipt of an e-mail dated 25 March 2014 requesting a time extension for the Town of Fairfield to complete PW-680, Penfield Pavilion Restoration Project, associated with DR-4087-CT. Because of the reasons outlined in your e-mail, and the time necessary to complete this work, your request for an extension is hereby granted. The extension will be for an additional Fourteen, (14) months making your new deadline for completion 30 June 2015. Dana Conover, State of Connecticut PA Coordinator (860) 883-3904

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Note: The Effective Cost Share for this application is 75%

FEDERAL EMERGENCY MANAGEMENT AGENCY
PROJECT WORKSHEET

DISASTER: EMA 4087 - DR
PROJECT NO. BMFARG5
PA ID NO. 001-07-30-2015
DATE 26620-00
CATEGORY: G

APPLICANT: FAIRFIELD (TOWN OF)

WORK COMPLETE AS OF: 07-30-2015: 2%
Site 1 of 1

COUNTY: Fairfield
LATITUDE: LONGITUDE: 41.134787 -73.241356

DAMAGED FACILITY:
Penfield Pavilion

LOCATION:
A-01-CT-4087-PW-00680(0):
323 Fairfield Beach Road, Fairfield, CT 06824

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:
A-01-CT-4087-PW-00680(0):

Damage Description and Dimensions:
During the incident period starting October 27, 2012 and ending November 8, 2012, the Town of Fairfield suffered damages to the Penfield Pavilion due to the effects of Super Storm Sandy.

The Penfield Pavilion consists of a 16,756 square foot single story, wood/steel frame structure that has 10,811 square feet of wood decking surrounding it. The main structure consists of the east wing, a 10,000 square foot locker room area, without interior finishes (only bathroom/showers and changing cubicles/lockers) and composite decking for the floor. The central and west wing is 6,756 square foot of finished offices, concession stands, concession kitchen, separate event kitchen, lifeguard station, first-aid room, outdoor accessible garage/maintenance area, solar hot water panels and a banquet facility with ocean facing wall to wall, ceiling to floor glass curtain wall, for both indoor and outdoor dining (on the deck). The building is a one-story light-framed wood construction for both wings, and a steel column framed structure supporting roof timber trusses for the central open two story high Gathering Room.

The building floor plan, which varies in width, occupies an area with overall dimensions of approximately 85 feet by 325 feet. The outside decking is standard deck construction of light lumber elements (planks, joists & beams) and composite decking, with multiple ramp and stair access, all supported on concrete piers.

The Albane report indicated that the storm surge from Super Storm Sandy breached over and around a concrete/stone revetment wall and a wooden bulkhead system constructed to protect the pavilion. The breach allowed the surge water to flow under the building resulting in significant scouring, causing undermining of the buildings foundations. The bulkhead was built down to 4 feet below grade, which is the usual amount of sand scouring seen...
after big storms. In order to obtain an accurate assessment of the damages caused by the event, the applicant retained J.M. Albaine Engineering and RACF Roberge Associates Coastal Engineers, LLC, to study and analyze the damages, and to prepare a detailed damage description with dimensions, as well as a repair cost estimate using local pricing.

The storm eroded several critical footings, locations illustrated in the blue highlighted area on drawing A-1 (Reference “A-1pdf”). The scour, caused by the force of storm surge waters, caused significant damages to piers, decking, floors, walls, roof and ramps. Several footings located under the Gathering Room and a section of the West Wing were completely undermined, losing all contact bearing with the soil, causing warping of the floor in this room, and roof supports out of plumb. Also one of the grade beams was broken.

Engineer reported damages (Reference “Saugatuck Construction Group Estimate.pdf”) consists of:
- East Wing
  - Foundation system
    Several footings were damaged by excessive scour, as shown in blue highlight area on drawing A-1 (Reference “A-1pdf”). Most of the observed damage is located on the south end on the deck area.
- Roof Framing
  The roof covering the outdoor deck has been pulled in the south-east direction (mostly eastward) caused by a combination of the footing failure and wave action in this area.
- Floor Framing
  The decking boards for the outdoor deck are distorted and warped, and will need to be replaced or reinstalled for those components that were not damaged beyond repair.
- Central area and Gathering Room
  - Foundation system
    The majority of footings located under the Gathering Room were completely undermined, losing all contact bearing with the soil. Settlement of the footing from loss of soil support caused warping of the floor in this room, and misalignment of the roof support. This also caused one of the grade beams to break. The foundation failure under the Gathering Room has distorted the room, where the "squealing" (the dimensions of all sides being parallel) was found with a warp in the south west direction. Moreover, it has been observed that there is a differential settlement of approximately 8 inches (from north to south), rendering the floor of this room out of level.

The foundation failure under this area of the complex is the cause of all observed damages.

- Roof Framing:
  The main structural roof consists of deck boards (2" x 6"), purlins (6 "x10"), and timber trusses (2" x 12"). The trusses are supported on steel columns, wide flanges W 10 x 68 (10-in deep, weighing 68 pounds per foot) and W10 x 100 (nominal 10" deep, weighing 100 lb./ft.).
  The roof structure has displaced and twisted to some degree due to the downward differential settlement of the footings in this area. Visual inspection indicates that the roof timber trusses are in satisfactory condition, although they have rolled (rotated).

- Floor Framing:
  The existing floor framing is made of 2" x 12" joints spanning between main “Glue-Lam” beams. The floor deck is 5/4 tongue- & groove decking. Several “Glue-Lam” beams were found damaged beyond repair, due to the excessive loss of support from footing scour action.

In the area of the Gathering Room, the decking and finish floor are extensively damaged, and will require complete removal and reconstruction.

The adjacent areas of the gathering room, such as office, bathrooms, storage, main kitchen, and concession/kitchen may require partial rebuilding of floors, especially in those directly affected by failure of the footings below.

- Wall Framing:
  The interior walls designed as partition, non-bearing walls, will need to be resurfaced once the building is positioned on the new foundation system. Shear walls in the Gathering Room were rebuilt after fire.

- West Wing:
  The foundation failure under this wing is extensive, and many of the findings and recommendations described for the Gathering Room wing will be applicable for this part of the building too. Furthermore, all the outdoor decking with the required ramps will be re-built since the damage to the outdoor decks are significant.

Current Version:

SCOPE OF WORK:

PA-01-CT-4087-PW-00680(0):

Synopsis of Project Development:
During the initial phase of this project it was agreed between FEMA and Fairfield that an engineer would be retained to provide a definitive damage description and recommended scope of work to restore the pavilion to its pre-disaster condition. This was based on site visits and two meetings with the agent, their insurance provider and engineers. On 2/14/13 the engineering contract was awarded to Albaine Engineering. On 7/23/14 FEMA was provided the recommended scope of work prepared by Saugatuck Construction Group, recommended project repair cost of $3,655,018. On 9/25/14 Fairfield requested that the application of 44 CFR 206.226(f) be used to determine if the Fairfield Pavilion is eligible for repair or replacement; (also known as “the 50 Percent Rule”). On 9/26/14 Witt, (consultant retained by Fairfield and authorized as their agent), submitted their recommended repair versus replacement CEF calculation of 69%. During the next five months FEMA, DEMHS Fairfield and Witt worked extensively on the Witt provided repair/replacement CEF with FEMA requesting additional documentation to support the analysis. In March of 2015 FEMA contracted a technical assistance coordinator to assist in the formulation of the final repair versus replacement CEF. On 9/17/2013, all parties agreed on the final 50/50 CEF calculation of 54.5% (referred as "Penfield Pavilion Final CEF.pdf"). This resulted in a determination of eligibility for replacement. This PW represents replacement, back to pre-disaster footprint, form and function, as per the approved CEF scope of work. All revisions listed occurred prior to initial obligation (Version 0).

SCOPE OF WORK:

****WORK COMPLETED: ****
The applicant has contracted with J.M Albaine Engineering to provide labor and all else necessary for the architectural design and structural analysis for the Penfield Pavilion foundation repair, including raising, building repair and bulkhead modifications. Work completed to date includes the following:
Coastal Engineering Analysis and Repor.

- Architectural Design/Drawings/Inspection PCI.
- Conceptual designs in order to develop the cost estimate.
- A new site plan.
- Designed 3-D models of the new facility and site plan.
- Provided the insurance carrier with an estimated construction cost.
- Developed construction estimates for repairing the building and leaving it in its current place and for moving it back into the parking lot area.
- Meetings/conferences/printing/mailing and other functions.

Proof of payment for actual costs for the above Work Completed have not been provided or directly captured in this PW. However, scope of work and costs are reasonably addressed in the contingency factors of the Replacement CEF. Actual eligible costs will be captured at closeout.

The Town installed temporary footing underpinning timbers ("railroad ties") under the major column footings to prevent any further destabilization. This was completed on Nov. 3rd, 2012. The cost for the temporary shoring emergency work is captured in Cat B PW 663.

SCOPE OF WORK FOR REPAIR TO PRE-DISASTER:

**WORK TO BE COMPLETED**

**FINAL DETERMINATION FOR 50/50 RULING IS REPLACEMENT**

This Repair Scope of Work was provided by the applicant. An estimate is in the form of a line item estimate completed by Saugatuck Construction Group, a contractor familiar with the pavilion project. This Estimate includes applicable costs, by detailed line items, necessary to return the facility back to pre-disaster condition. This Saugatuck Group estimate also includes contingency costs. These contingency costs were not utilized in the formulation of this PW. All other estimated repair to pre-disaster costs were found to be eligible and included in the formulation of this PW.

The Saugatuck estimate (without contingencies) of $2,313,978.85 was entered into the FEMA CEF as "Part A Uncompleted Permanent Total". Results of the CEF estimate, adding all pertinent contingencies resulted in a total estimate of $4,128,888, to return to pre-disaster condition. (Reference attachment "Repair Scope of Work")

Saugatuck Group Repair Costs subtotal $2,313,978.85
TOTAL REPAIR CEF ESTIMATE (including contingencies) RETURN TO PRE-DISASTER CONDITION $4,128,888

*****50 % RULE *****

The applicant did request the calculation of the 50% rule for this project.

FEMA will restore an eligible facility to its pre-disaster design. If the repair cost divided by the replacement cost is less than 50% then only the repair cost is eligible. If the repair cost divided by the replacement cost is greater than 50% then the replacement cost is eligible. The determination of repair cost value for the 50% rule, as per "DAP 9524.4 Repair vs. Replacement of a Facility under 44 CFR 206.226, includes ONLY these repairs, including non-emergency mold remediation, associated with the damaged components and the codes and standards that apply to the repair of those damaged components. This cost DOES NOT include upgrades of other components triggered by codes and standards, design, demolition of the entire facility, site work, or applicable project management costs, even though such costs may be eligible for Public Assistance. The cost of contents and HAZARD MITIGATION measures are not included in the calculation of the 50% repair costs.

The 50% replacement cost includes the costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards. This cost DOES NOT INCLUDE demolition, site work and applicable project management costs.

The applicant provided "Repair" Estimate was validated as reasonable by comparing local and RS Means construction cost data. With the removal of costs not utilized per policy for the 50% determination, a final "Repair" Cost for the 50/50 determination is valued at $2,090,442.85.

A CEF was produced to determine the "Replacement" cost. This was calculated with details from the applicant provided original construction plans of the East and West wing projects (Reference multiple attachments of original plans, file titles proceeded by "plan"). The resulting CEF, with the appropriate site costs removed, but including costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards resulted in a 50/50 replacement value of $3,833,932.60.

The 50/50 calculation result of $2,090,442.85/$3,833,932.60 or 54.5% supports eligibility of Replacement.

The Replacement Estimate was derived utilizing RS Means with an initial Square Foot model type of "Club, Country, Wood Shingles/Wood Frame", 12 bot Story Height, 16,756 SF, in Norwalk CT, 2015 Quarter 2, using union wages, supplemented with "Building Construction", "Site Work and Landscaping", and "Assemblies" cost data. The Square Foot Model cost list provides a base construction cost plus allowances for Contractor overhead & profit, A/E fees. The CEF was further developed based on substitutions and additions to reflect the existing facility plans to a reasonable degree. All applicable Codes and Standards included.

The CEF provides General or Prime Contractor overhead and profit in Part B.2 (general site supervision and coordination - fixed at 4.25%), and Parts D.1 G.C. home office overhead - fixed at 7.7%), D.2 (G.C. project insurance and bonds - fixed at 3.3%), and D.3 (G.C. profit - 4% for construction of new building, and 10% for site work and special engineering services based on sliding scale). The CEF Provides base A/E design fees in Part H.2 and in design contingency, Part C.1 for costs associated with protection of the existing parking area in front of the pavilion, and the bulkhead wall. Part D.3 contingency or General contractor profit of 4% for replacement and 10% for demo and geotechnical exploration for pile design (aggregate of 5.04%) is included in this estimate.

The CEF includes an escalation of 2.8% based on a project schedule of 16 months to the mid-point of construction, and a monthly escalation factor of 1.176%. The monthly escalation factor was computed based on changes in the Building Construction Cost Index from May, 2013 to May, 2015 published by Engineering News Record.
The CEF also includes applicant’s cost to manage both the design (H.1 – fixed at 1%) and construction (H.2 – 3% for building construction, and 6% for demolition, geotechnical engineering, aggregate 3.13%) phases of the project.

Cost included in CEF Parts B.1 for site safety, utilities and quality control, and submittal, Part C.2 constructability, which is not applicable to new work, and Part C.3 for contractor access, storage and staging are already included in the model cost allowance, therefore not duplicated. CEF Part C.4, adjusts the estimated project cost to account for economies of scale. As the Square Foot models estimate are based on project specific dimensions, Part C.4 is not used in the estimate.

Additional construction costs not eligible in the formulation/calculation of the 50% Rule, are eligible in conjunction with an eligible replacement (Reference attached DAP 9524.4). These are costs for demolition, disposal, geotechnical surveys (as per code for foundations) Site work, Project Management, Architectural, Engineering, Financing, Legal Fees, Contests, Hazard mitigation measures, and Other pre/post-construction expenses. Note that Contractor Overhead & Profit, A/E Fees and Site Supervision are already included in the costs derived from the Base Model calculation, as stated above. With the addition of these remaining eligible costs, the final Replacement PW Estimate Total is $6,583,222.00 (Reference “Penfield Pavilion Final CEF.pdf”).

ELIGIBLE REPLACEMENT COSTS
FEMA will restore an eligible facility to its pre-disaster design. Replacement Cost includes the costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards. This includes demolition, disposal, and elevation above new FEMA flood height. FEMA will not fund additional capacity necessary due to increased population or use, even if required by code (Reference attachment “DAP9524.4.pdf”).

Codes and Standard compliance would be warranted for the foundation system costs to raise the lowest horizontal member above the Base Flood Elevation (BFE) of 13 (VS Zone), (an area inundated by 1% annual chance flooding with velocity hazard/wave action). The Town currently does not have an ordinance for freeboard requirements. All conversations and recommendations from the Town consultants was a freeboard of 2 feet. The existing structure had the (Finished Floor Elevation) FFE at 12 or 1 foot above the BFE 11 (AE Zone) (an area inundated by 1% annual chance flooding, for which BFEs have been determined.). The current distance from FFE to the lowest horizontal member is 2.5 to 3 feet, dependent of exact framing dimensions. The new finish floor elevation would be 15:5 to minimum based on a BFE of 13 without freeboard.

Note: All original plans and specifications for the pre-disaster design of the “East” and “West” Wing phases of the Penfield Pavilion are attached to this PW (Reference multiple attachments of original plans, file titles preceded by “plans”).

***PROJECT NOTES***

PREVIOUS DAMAGE:
The facility had sustained damage from a March 2010 storm resulting in a solid wood skirting being built around the bottom of the structure to fully enclose the foundation system after significant storm surge had run underneath the structure. Damage was discovered in several areas of the asphalt roof shingles during the March 2010 storm (DR 1904, PW 00039). There was a scouring away of significant amounts of sand due to Tropical Storm Irene August 2011, (DR 4023, PW 01340).

After Tropical Storm Irene, a concrete block revetment was added between the structure and the Long Island Sound waterline. In February 2012 construction began on a wooden bulkhead on the Long Island Sound side of the structure that was situated between the concrete revetment and the Pavilion. At each stair case and ramp entrance, “bulkhead gates” were put in for access to the beach.

MITIGATION MEASURES:
Cannot be applied to replacement buildings. Since new construction will be to current codes and standards, which are intended to ensure structural integrity for local conditions, mitigation funding applies only to building repairs, which generally are not covered by codes and standards.

INSURANCE:
The applicant has insurance on this facility; however it is not issued through the NFIP. There is a $500,000 deductible with this policy. A copy of this policy is with the FEMA Insurance Specialist and on file at the JFO. Bryan McSween PAC CL August 6, 2013.

INSURANCE SPECIALIST STATEMENT:
No NFIP coverage was in place at time of event.
The Stafford Act includes specific provisions for insurance of facilities located in floodplains. Most property insurance does not cover flood damage; instead, a separate flood insurance policy must be purchased to obtain this coverage.

Section 406(d) of the Stafford Act mandates a special reduction in the amount of Public Assistance funding for a facility (facility meaning each separate building or structure insured under NFIP Coverage A - Buildings) that is:
• Insurable under the NFIP;
• Located in a Special Flood Hazard Area, as shown on a FIRMETTE; and,
• Damaged by flood waters.

For insurable facilities that do not have flood insurance or carry inadequate flood insurance, FEMA will reduce eligible project costs by the lesser of:

The maximum amount of insurance proceeds that could have been obtained from a standard NFIP flood insurance policy, or:
• The value of the facility at the time of the disaster.

After the reduction, FEMA assistance is available for:
• Reasonable deductible (limited to minimum available under NFIP), but only for the first disaster and not for subsequent disasters;
• Items not covered by the NFIP; and damage in excess of limits of a standard NFIP policy.

As a condition for receiving Public Assistance for permanent work, an applicant must obtain and maintain insurance to cover that facility for the hazard that caused the damage. Such coverage must, at a minimum, be in the amount of the estimated eligible damages for that structure prior to any reduction. The costs of Section 406 hazard mitigation measures are included in the amount of insurance required. If the requirement to purchase all insurance is not met,
EMAWill not provide assistance for damage sustained in the current or a future disaster of the same type. If the applicant does not maintain all required insurance, FEMA will not provide any assistance for that facility in future disasters of the same type. An applicant is exempt from this requirement for:

Projects where the eligible damage (before any reductions) is less than $5,000; or

Facilities for which, in the determination of the State insurance commissioner, the type and/or extent of insurance being required by FEMA is not reasonable (This exemption does not apply to facilities insurable under the NFIP because insurance is both available and reasonable.)

DIRECT ADMINISTRATIVE COSTS:
The subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to the administration of this PA project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates. At this time the applicant has not supplied FEMA with any documentation that supports these costs. At close-out these documents will be requested in order to reconcile associated costs.

WORK TO BE COMPLETED:
Upon completion, this site will be returned to its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards. Acquiring all necessary Federal, State, and local permits is required for Federal Funding. Noncompliance with this requirement may jeopardize the receipt of Federal funds.

PROCUREMENT:
The Applicant has been advised by FEMA PAC and/or Project Specialist that in the seeking of proposals and letting of contracts for eligible work, the Applicant must comply with its Local, State and/or Federal procurement laws, regulations, and procedures.

RECORD RETENTION:
As described in 44 CFR 13.42 (2)(b), (3)(c), Subgrantee must maintain all work-related records for a period of three (3) years from Subgrantee closure (final payment), all records relative to this project worksheet are subject to examination and audit by the State, FEMA and the Comptroller General of the United States and must reflect work related to disaster specific costs.

LARGE PROJECT COST INCREASE:
Applicant shall notify the CT Department of Emergency Services and Public Protection (DESPP), Division of Emergency Management and Homeland Security (DEHMS) of any significant cost increase in the approved scope of work. Contact: DEMHS Emergency Management Office at (860) 256 – 0800 or by E-Mail at demhs.pa@ct.gov

CHANGE IN SCOPE:
Applicant shall notify the CT Department of Emergency Services and Public Protection (DESPP), Division of Emergency Management and Homeland Security (DEHMS) prior to initiating any work that changes the scope of approved work as given in this sub-grant application. Contact: DEMHS Emergency Management Office at (860) 256 – 0800 or by E-Mail at demhs.pa@ct.gov

FORCE ACCOUNT LABOR:
The Town of Fairfield Director of Public Works and Town Engineer worked a total of 233.3 hours performing Project Management directly pertaining to the process of repairing the Pavilion from the damages incurred from Storm Sandy.

DIRECT ADMINISTRATIVE COSTS:
The Town of Fairfield Director of Public Works and the Town Engineer worked a total of 52.8 hours directly related to the development of this PW in accordance with FEMA 9525.9.
The applicant utilized the services of Witt O'Brien's as a consultant in preparing their PA Grant applications. A claim has been provided, dated for an additional $29.5 ($33,158.21) consultant hours documented as eligible work directly related to this project, as per FEMA 9525.9. These hours are recognized, but not included into the final total pending further review.

INSURANCE NOTE:
Applicant provided Insurance settlement Information. As per Loss Statement from CIRMA dated August 25, 2014, “CIRMA provides first party Property Coverage to the Town of Fairfield and Fairfield Board of Education for those claims arising July 1, 2012 through June 30, 2013, subject to a $100,000 deductible for property coverage and $500,000.00 deductible for each building damaged within a designated flood zone. Our investigation indicates that The Penfield Pavilion which is located at 331 Fairfield Beach Road is in a designated flood zone VE. As we are aware the damage to the Penfield Pavilion was that of storm surge, therefore the $500,000 deductible would apply. CIRMA provided the Town of Fairfield with a payment of $1,750,000.00 towards the Property loss ($2,250,000.00 physical building damage less $500k deductible). Also provided is a copy of the “Sworn Statement in Proof of Loss”, signed by the First Selectman of Fairfield accepting the Insurance settlement based on a damage value due to Storm Sandy at Penfield Pavilion for a total dollar amount of $2,250,000.

STRATEGIC FUNDS MANAGEMENT
The purpose of Strategic Funds Management (SFM) is to provide PA with the ability to obligate funding consistent with the Sub-Grantee’s project schedule and financial requirements while enhancing the management and use of Disaster Relief Funds (DRF).

Applicant will be drawing funds in (Month) (Year). The contract is anticipated to be accepted on (Month) (Year). Construction will begin shortly after the contract is signed. Construction is expected to be completed in (Month) (Year). The applicant must contact the State whenever the estimated final obligation date changes. Applicants must notify the Grantee in writing (i.e., via email or letter) to request SA funding 30 days in advance of the projected date funds needed. No additional documentation is required to request obligation of funds. The eligible facility that this subgrant is based on is the Penfield Pavilion. All eligible work is defined as Replacement to Pre-disaster Condition, as supported by the attached 50/50 Rule CEF value of 54.5%. If the applicant wishes to alter the scope of work, they must request an Improved Project or Alternate Project from the State/FEMA prior to construction. Return a Pre-Disaster Condition scope of work is based on the applicant provided original building plans, attached to this PW.

Final Reviewer Comments:
We have confirmed with the Grantee and/or Applicant that this project is not subject to SFM and they will begin using the funds within the next 180 days. To summarize the Scope of Work of the project: The existing building will be razed and properly disposed of. The site will be groomed and prepared for the construction of a new pavilion, built to the specs provided by the original architect. The new pavilion will be built in the existing footprint and elevated.
Coders and Standards compliance. The new foundation system will be raised so the lowest horizontal member will be 2.5 feet above the Base Flood Elevation (BFE) of 13 (VE Zone), to an elevation of 15.5 feet. The existing structure had the (Finished Floor Elevation)FFE at 12 or 1 foot above the BFE:1: (AE Zone) per the Flood Insurance Rate Map valid at the time.

Note: The current Scope of Work is written as a replacement.

If applicant wishes to alter the approved scope of work, they must first formally request approval for changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.

Subgrantees shall request approval for changes to the approved scope of work from FEMA before they perform the work. The revised scope of work may result in additional environmental/historic preservation compliance reviews and/or new permits.

Current Version:

Does the Scope of Work change the pre-disaster conditions at the site?  Yes ☑ No

Hazard Mitigation proposal included? Yes ☑ No

Special Considerations included? Yes ☑ No

Is there insurance coverage on this facility? Yes ☑ No

PROJECT COST

ITEM CODE NARRATIVE QUANTITY/UNIT UNIT PRICE COST

1 9901 DIRECT ADMINISTRATIVE COSTS (SUBGRANTEE) 1/LS $6,832.11 $6,832.11

2 9999 WITT O'BRIENS CLAIMED DAC FURTHER REVIEW 1/LS $35,158.21 $35,158.21

3 9999 WITT O'BRIENS DAC PENDING FURTHER REVIEW 1/LS $-35,158.21 $-35,158.21

4 9000 CEF COST ESTIMATE 1/LS $6,583,222.00 $6,583,222.00

5 0000 Insurance Adjustments - 5900/5901 0/LS $0.00 $0.00

6 5902 MANDATORY NFIP REDUCTION - MAXIMUM PROCEEDS AVAILABLE - see attached worksheet 1/LS $- 500,000.00 $-500,000.00

7 5904 DEDUCTUAL FLOOD INSURANCE PROCEEDS - Per CIRMA 1/LS $- 1,750,000.00 $-1,750,000.00

TOTAL COST $4,340,054.11

PREPARED BY Frank P Mazzarella

APPLICANT REP. Joseph Michaelangelo

TITLE PAC CL SIGNATURE

TITLE Director of Public Works SIGNATURE

FAIRFIELD (TOWN OF): PA-01-CT-4087-PW-00680

Conditions Information

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<tr>
<th>Review Name</th>
<th>Condition Type</th>
<th>Condition Name</th>
<th>Description</th>
<th>Monitored</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Final Review Other (EHP) Executive Order 11990 - Wetlands Applicant is required to publish final notice of decision to perform work which affects wetlands per Executive Order 11990 Wetlands Protection 8 Step Process. The public notice should include location, brief description of work and the decision making process for the project. The notice should run at least 15 days prior to start of work. See attached 8-Step Process. The Applicant shall ensure that Best Management Practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the Clean Water Act and Executive Order 11990.</td>
<td>No</td>
<td>Approved</td>
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<tr>
<td>Final Review Other (EHP) Standard Condition #3 If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.</td>
<td>No</td>
<td>Approved</td>
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</tr>
<tr>
<td>Final Review</td>
<td>Other (EHP)</td>
<td>Standard Condition #2</td>
<td>This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize federal funding.</td>
<td>No</td>
<td>Approved</td>
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<tr>
<td>Final Review</td>
<td>Other (EHP)</td>
<td>Standard Condition #1</td>
<td>Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.</td>
<td>No</td>
<td>Approved</td>
</tr>
<tr>
<td>Final Review</td>
<td>Other (EHP)</td>
<td>Executive Order 11988 - Floodplains</td>
<td>Applicant must coordinate with the local floodplain administrator and must obtain any required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. Applicant is required to publish final notice of decision to perform work within the floodway per Executive Order 11988: Floodplain Management 8-step process. The public notice should include location, brief description of work, and the decision making process for the project. The notice should run at least 15 days prior to start of work. See attached 8-Step Process.</td>
<td>No</td>
<td>Approved</td>
</tr>
<tr>
<td>Final Review</td>
<td>Other (EHP)</td>
<td>State Hazardous Materials and Solid Waste Laws</td>
<td>Unusable equipment, debris, or material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, applicant shall handle, manage, and dispose of petroleum products, hazardous materials, and/or toxic waste in accordance to the requirements and to the satisfaction of the governing local, state, and federal regulations. These materials may include, but are not limited to propane cylinders, paints and solvents, coolants containing chlorofluorocarbons (CFCs), used oil, other petroleum products, used oil filters, fuel filters, cleaning chemicals, laboratory reagents, pesticides, batteries, and unlabeled tanks and containers. Equipment that may include these materials are ice machines, refrigerators, generators, computers, televisions, mercury switches, fluorescent lights, fluorescent light ballasts, sandblast units, paint sprayers, etc. If any asbestos containing material, lead based paints, and/or other toxic materials are found during remediation or repair activities, the applicant must comply with all federal, state, and local abatement and disposal requirements under the Toxic Substances Control Act (TSCA).</td>
<td>No</td>
<td>Approved</td>
</tr>
<tr>
<td>Final Review</td>
<td>Other (EHP)</td>
<td>Coastal Zone Management Act (CZMA)</td>
<td>The applicant is responsible for coordinating with and obtaining any required permit(s) from the Connecticut Department of Energy and Environmental Protection, Office of Long Island Sound Programs (860-424-3034) prior to initiating work. The applicant shall comply with all conditions of the required permits. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.</td>
<td>No</td>
<td>Approved</td>
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<tr>
<td>EHP Review</td>
<td>Other (EHP)</td>
<td>Standard Condition #3</td>
<td>If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.</td>
<td>No</td>
<td>Recommended</td>
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<td>EHP Review</td>
<td>Other (EHP)</td>
<td>Standard Condition #2</td>
<td>This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize federal funding.</td>
<td>No</td>
<td>Recommended</td>
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<td>Other (EHP)</td>
<td>State Hazardous Materials and Solid Waste Laws</td>
<td>Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of IEC project, applicant shall handle, manage, and dispose of petroleum products, hazardous materials and/or toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal regulations. These materials may include, but are not limited to propane cylinders, paints and solvents, coolants containing chlorofluorocarbons (CFCs), used oil, other petroleum products, used oil filters, fuel filters, cleaning chemicals, laboratory reagents, pesticides, batteries, and unlabeled tanks and containers. Equipment that may include these materials are ice machines, refrigerators, generators, computers, televisions, mercury switches, fluorescent lights, fluorescent light ballasts, sandblast units, paint sprayers, etc. If any asbestos containing material, lead based paints, and/or other toxic materials are found during remediation or repair activities, the applicant must comply with all federal, state, and local abatement and disposal requirements under the Toxic Substances Control Act (TSCA).</td>
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<td>No</td>
<td>Recommended</td>
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<tr>
<td>Insurance Review</td>
<td>Conditions (Grant Specific)</td>
<td>Insurance</td>
<td>10/27/2015 - Compliance with Section 311 of the Stafford Act and its implementing regulations, Title 44 CFR 206.250-253 is a grant condition. Applicant must obtain and maintain flood insurance coverage for the replacement building. Such coverage must be in the amount of the actual eligible replacement cost plus any insurable hazard mitigation cost. A combination of NFIP and commercial flood insurance coverage can be used to meet this requirement. The Regional Director shall not require greater types and extent of insurance than are certified as reasonable by the State Insurance Commissioner. FEMA will not provide assistance for the same facility in future disasters if the requirement to obtain and maintain flood insurance is not met. The current requirement amount is subject to change based on the final eligible cost. Don Siler FEMA Insurance Specialist</td>
<td>Yes</td>
<td>Recommended</td>
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**Internal Comments**

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<thead>
<tr>
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<th>Queue</th>
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<th>Date/Time</th>
<th>Reviewer Comments</th>
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| 29  | Amendment Review | MAZZARELLA FRANK | 12-31-2015 01:36 PM GMT | ***TIME EXTENSION TO 10/30/2016****
Mr. Michael C. Tetreau, First Selectman, Town of Fairfield, 725 Old Post Road, Fairfield, CT 06824
26 June 2015
RE: Approval of the Town of Fairfield's 2nd Request for an extension of the Penfield Pavilion Restoration Project, DR-4087-CT PW-680
Dear Selectman Tetreau:
I am in receipt of an e-mail dated 26 June 2015 requesting a second time extension for the Town of Fairfield to complete PW-680, Penfield Pavilion Restoration Project, associated with DR-4087-CT. Because of the reasons outlined in your e-mail, and the time necessary to complete this work, your request for an extension is hereby granted. The extension will be for an additional Sixteen, |
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Author/Reviewer</th>
<th>Note</th>
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<tr>
<td>12-07-2015</td>
<td>06:20 PM</td>
<td>SHERWOOD BRUCE</td>
<td>Final Review. The information and attachments contained in this PW have been reviewed and appear as accurate and complete. Note: The current Scope of Work is written as a replacement. If applicant wishes to alter the approved scope of work, they must first formally request approval for changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction. To summarize the Scope of Work: The existing building will be razed and properly disposed of. The site will be groomed and prepped for the construction of a new pavilion, built to the specs provided by the original architect. The new pavilion will be built in the existing footprint and elevated per Codes and Standards compliance. The new foundation system will be raised so the lowest horizontal member will be 2.5 feet above the Base Flood Elevation (BFE) of 13 (VE Zone), to an elevation of 15.5 feet. The existing structure had the (Finished Floor Elevation) FFE at 12 or 1 foot above the BFE 11 (AE Zone) per the Flood Insurance Rate Map valid at the time. Subgrantees shall request approval for changes to the approved scope of work from FEMA before they perform the work. The revised scope of work may result in additional environmental/historic preservation compliance reviews and/or new permits. By Sherwood 12/7/15.</td>
</tr>
</tbody>
</table>
| 11-10-2015 | 03:15 PM  | KUNS ERIC       | During the incident period starting October 27, 2012 and ending November 8, 2012, the Town of Fairfield suffered damages to the Penfield Pavilion due to the effects of Super Storm Sandy. The Penfield Pavilion consists of a 16,756 square foot single story, wood/steel frame structure that has 10,811 square feet of wood decking surrounding it. The main structure consists of the east wing, a 10,000 square foot locker room area, without interior finishes (only bathroom/showers and changing cubicles/lockers) and composite decking for the floor. The central and west wing is 6,756 square foot of finished offices, concession stands, concession kitchen, separate event kitchen, lifeguard station, first-aid room, outdoor accessible garage/maintenance area, solar hot water panels and a banquet facility with ocean facing wall to wall, ceiling to floor glass curtain wall, for both indoor and outdoor dining (on the deck). The building is a one-story light-framed wood construction for both wings, and a steel column framed structure supporting roof timber trusses for the central open two story high Gathering Room. The building floor plan, which varies in width, occupies an area with overall dimensions of approximately 85 feet by 325 feet. The outside decking is standard deck construction of light lumber elements (planks, joists & beams) and composite decking, with multiple ramp and stair access, all supported on concrete piers. The storm surge from Super Storm Sandy breached over and around a concrete/stone revetment wall and a wooden bulkhead system constructed to protect the pavilion. The breach allowed the surge water to flow under the building resulting in significant scouring, causing undermining of the buildings foundations, and significant damages to piers, decking, floors, walls, roof and ramps. Several footings located under the Gathering Room and a section of the West Wing were completely undermined, losing all contact bearing with the soil, causing warping of the floor in this room, and roof supports out of plumb. Also one of the grade beams was broken. At the East Wing, several footings were damaged by excessive scour. The roof covering the outdoor deck has been pulled in the south-east direction (mostly eastward) caused by a combination of the footing failure and wave action in this area. The decking boards for the outdoor deck are distorted and warped, and will need to be replaced or reinstalled for those components that were not damaged beyond repair. Settlement
of the footing from loss of soil support caused warping of the floor in this room, and misalignment of the roof support. This also caused one of the grade beams to break. The foundation failure under this area of the complex is the cause of all observed damages.

The existing building will be razed and properly disposed of. The site will be groomed and prepared for the construction of a new pavilion built to the specs provided by original Wies Architect, Pennfield Pavilion Renovations, Projects Phase 1 and II, 08-229 (2/14/2007) and 08-259 (6/2/2010). The new pavilion will be built in the existing footprint on previously disturbed ground and elevated per Codes and Standard compliance. The new foundation system will be raised so the lowest horizontal member will be 2.5 feet above the Base Flood Elevation (BFE) of 13 (VE Zone), to an elevation of 15.5 feet. The existing structure had the (Finished Floor Elevation) FFE at 12 or 1 foot above the BFE 11 (AE Zone) par the Flood Insurance Rate Map valid at the time.

This project has been determined to be Categorically Excluded from the need to prepare either an Environmental Impact Statement or Environmental Assessment in accordance with 44 CFR Part 10.8(d)(2)(iv). Particular attention should be given to the project conditions before and during project implementation. Failure to comply with these conditions may jeopardize federal assistance including funding. —jpetczar - 11/05/2015 12:55:57 GMT

The Applicant shall ensure t

10/27/2015 – Insurance Review - As a result of the declared event, the Pavilion flooded. Based on the Flood Insurance Rate Map (FIRM) that was in effect at the time of the declared disaster, the Pavilion was situated within a Special Flood Hazard Area (SFHA) zones AE and VE (Map number 09001C0438F, Effective date – June 18, 2010). Based on the available insurance information; the Pavilion was not insured under a Standard Flood Insurance Policy (SFIP) issued by the National Flood Insurance Program (NFIP) at the time of the declared disaster. The applicant did have a commercial flood insurance policy issued by Connecticut Intercal Risk Management Agency (CIRMA) (policy # LAP2012002969) which is a blanket type policy with coverage limits of $755,588,780.00 for real and personal property. This policy did provide flood coverage subject to a sub limit of $10,000,000.00. The applicable deductible for the flood loss was $500,000.00 for the building and $500,000.00 for the contents.

CIRMA estimated to repair the facility, the estimated cost to bring the Pavilion back to pre-disaster condition was $2,250,000.00 loss $500,000.00 deductible = $1,750,000.00. The total assistance for this project has been reduced by ($1,750,000.00) for actual flood insurance proceeds.

Since the Pavilion was located within a SFHA and was not insured under a SFIP issued by the NFIP; a mandatory reduction is required. Per §205.252(a) Where an insurable building damaged by flooding is located in a SFHA identified for more than one year by the Director, the amount of the reduction shall be the maximum amount of the insurance proceeds which would have been received had the building and its contents been fully covered by a standard flood insurance policy. The total assistance for this project has been reduced by ($500,000.00) due to the mandatory NFIP reduction for the building.

The applicant has indicated that they will replace this facility under the FEMA 50% rule. CIRMA has estimated to repair the structure as they have no contractual obligation to replace the Pavilion, if it can be repaired.

No prior FEMA claimed loss was located for this facility. As a condition for receiving Public Assistance for permanent work, the applicant must obtain and maintain flood insurance for the life of the building, see the Conditions section of this PW for details and amounts. Don Siler FEMA Insurance Specialist

08/09/2013 - Damage description and scope of work and mitigation are still undetermined. Working with the applicant’s carrier to determine insurance responsibilities.

Arnold Beasley, Insurance Reviewer

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On hold pending receipt of itemized insurance adjusters report from Applicant.

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8-6-2013

There appears to be no mitigation opportunity at this project work site.

John J. Hannon, P.E.
12/09/2014 The applicant has provided a "return to pre-disaster" repair estimate for the development of this version of the PW. Once the replacement cost version is completed, The Town of Fairfield will
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<td>09/14/2015</td>
<td>10:54 AM</td>
<td>DOWNER RICHARD</td>
<td>Mitigation Review</td>
<td>The applicant has provided a &quot;return to pre-disaster&quot; repair estimate for the development of this version of the PW. Once the replacement cost version is completed, The Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy. Richard N. Downer</td>
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<td>09/11/2015</td>
<td>07:48 PM</td>
<td>MAZZARELLA FRANK</td>
<td>Initial Review (EHP Rework)</td>
<td>The applicant has provided a &quot;return to pre-disaster&quot; repair estimate for the development of this version of the PW. This is to establish the appropriate base value to determine potential mitigation, improved project or alternate project opportunities that are available. Once the repair cost version is completed, The Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy.</td>
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</thead>
<tbody>
<tr>
<td>08/27/2014</td>
<td>12:46 PM</td>
<td>TOOTLE CORLISS</td>
<td>Insurance Review</td>
<td>08/27-2014 - Reviewed project. We still have not heard anything further from the applicant's insurance carrier, CIRMA since our last e-mail dated May 13, 2014. Sent a transition e-mail to CIRMA requesting that they contact the Close Out Insurance Review Team with this insurance documentation so we can review and process this project and attached that e-mail to the CMF. Arnold Beasley, Insurance Reviewer</td>
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<tr>
<td>08/27/2014</td>
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<td></td>
<td>08/27/2014 Released the PW to be reworked back to insurance after Frank rewrites the PW to accurately reflect all damage. Corfiss Tootle</td>
</tr>
<tr>
<td>12</td>
<td>12:52 PM</td>
<td>DOWNER RICHARD</td>
<td>Mitigation Review</td>
<td>12-09-2014 That appears to be no mitigation opportunity at this project work site. John J. Hannon, P.E. 12-09-2014 The applicant has provided a &quot;return to pre-disaster&quot; repair estimate for the development of this version of the PW. Once the replacement cost version is completed, The Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy. Richard N. Downer</td>
</tr>
<tr>
<td>11</td>
<td>12:47 PM</td>
<td>DOWNER RICHARD</td>
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</tr>
<tr>
<td>10</td>
<td>08:12 PM</td>
<td>MAZZARELLA FRANK</td>
<td>Initial Review (EHP Rework)</td>
<td>12-05-2014 That applicant has provided a &quot;return to pre-disaster&quot; repair estimate for the development of this version of the PW. This is to establish the appropriate base value to determine potential mitigation, improved project or alternate project opportunities that are available. Once the repair cost version is completed, The Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy.</td>
</tr>
<tr>
<td>9</td>
<td>06:59 PM</td>
<td>MAZZARELLA FRANK</td>
<td>Initial Review (EHP Rework)</td>
<td>12-05-2014 That applicant has provided a &quot;return to pre-disaster&quot; repair estimate for the development of this version of the PW. This is to establish the appropriate base value to determine potential mitigation, improved project or alternate project opportunities that are available. Once the repair cost version is completed, The Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy.</td>
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<td>TOOTLE CORLISS</td>
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<td>03/14/2014 - Reviewed project. It has been some time since we have had an updated status report on this applicant. Sent an e-mail to the applicant's insurance carrier, CIRMA requesting that they provide us with a status report so we can keep the Spend Plan updated and posted to the CMF. Arnold Beasley, Insurance Reviewer</td>
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<td>03/28/2014 - Reviewed project on diary. We have not heard anything from the applicant's insurance carrier, CIRMA since my last e-mail dated March 14, 2014. Sent another e-mail to CIRMA requesting a status report on this complex project. Arnold Beasley, Insurance Reviewer</td>
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<td>06/06/2013</td>
<td>Damage description and scope of work and mitigation are still undetermined. Working with the applicant's carrier to determine insurance responsibilities. Arnold Beasley, Insurance Reviewer</td>
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<td>Date</td>
<td>Review Type</td>
<td>Reviewer</td>
<td>Notes</td>
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<tr>
<td>05/13/2014</td>
<td>Initial Review</td>
<td>MCSWEEN BRYAN</td>
<td>08-06-2013 03:41 PM GMT This PW was prepared to capture the engineering costs that were incurred by the applicant for the repair of the Penfield Pavilion. An amendment will be written to capture the damages and repairs as well as a cost estimate. The applicant will also present their request</td>
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<tr>
<td>09/08/2013</td>
<td>Insurance Review</td>
<td>BEASLEY ARNOLD</td>
<td>08-06-2013 05:51 PM GMT 08/06/2013 - Damage description and scope of work and mitigation are still undetermined. Working with the applicant's carrier to determine insurance responsibilities. Arnold Beasley, Insurance Reviewer</td>
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<td>03/14/2014</td>
<td>Insurance Review</td>
<td>BEASLEY ARNOLD</td>
<td>08-06-2013 05:22 PM GMT 08/06/2013 - Damage description and scope of work and mitigation are still undetermined. Working with the applicant's carrier to determine insurance responsibilities. Arnold Beasley, Insurance Reviewer</td>
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<tr>
<td>03/29/2014</td>
<td>Insurance Review</td>
<td>RATTI JUSTIN</td>
<td>06-06-2014 02:54 PM GMT 09/08/2013 - Damage description and scope of work and mitigation are still undetermined. Working with the applicant's carrier to determine insurance responsibilities. Arnold Beasley, Insurance Reviewer</td>
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</table>
for DAC for this PW at or before close-out. B. McSwen PAC CL
August 6, 2013
November 28, 2018

William Hackett
Deputy Commissioner
Connecticut Department of Emergency Services & Public Protection
1111 Country Club Road
Middletown, CT 06457

Michael C. Tetreau
First Selectman
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824


Dear Messrs. Hackett and Tetreau:

The Federal Emergency Management Agency ("FEMA") previously approved and awarded Project Worksheet ("PW") #680 on December 17, 2015, under the Public Assistance grant for major disaster declaration FEMA-4087-DR-CT with a total approved project cost of $4,340,054.11. The applicant for this permanent work project was the Town of Fairfield ("Applicant") and the scope of work was the restoration of the Penfield Pavilion that was damaged during Hurricane Sandy. On June 30, 2016, the Connecticut Department of Emergency Services and Public Protection ("Grantee") submitted a revised scope change request for this project.

As detailed in the enclosed Public Assistance determination, I have determined that the project is ineligible for financial assistance. This is because the Applicant pursued a change in the approved scope of work without prior FEMA approval in violation of 44 C.F.R. § 13.30(d) and constructed the Penfield Pavilion in a manner that violated the federal regulations at 44 C.F.R. § 60.3(c)(5) and 44 C.F.R. § 9.11(d). It is also because FEMA was unable to complete environmental and historic preservation review before the Applicant completed the work and the Applicant never obtained a consistency determination from the Connecticut Department of Energy and Environmental Protection. As a result of the project’s ineligibility, I am terminating PW #680 and disallowing all costs.

The Applicant may appeal this determination to the Regional Administrator in accordance with the procedures and requirements set forth in Section 423 of the Stafford Act and its implementing regulation at 44 C.F.R. § 206.206. If the Applicant elects to file an appeal, the written appeal must: (1) contain documented justification supporting the Applicant’s position, (2) specify the monetary figure in dispute, and (3) cite the
provisions in federal law, regulation, or policy with which the Applicant believes this
determination was inconsistent. As FEMA will not accept additional information after
issuance of the Regional Administrator’s appeal decision, the Applicant must submit all
relevant supporting information with its appeal. I am enclosing an Administrative
Record Index that provides the current list of documents relative to this determination.

The Applicant must file the appeal with the Grantee within 60 days of the receipt
of this letter, and the Grantee must forward the appeal and a written recommendation to
the Acting Deputy Regional Administrator within 60 days of receipt from the Applicant.
The Grantee may submit the appeal via email to doug.wolcott@fema.dhs.gov or regular
mail to the following address:

Douglas Wolcott, Jr.
Acting Deputy Regional Administrator
FEMA Region I
99 High Street, 6th Floor
Boston, MA 02110

If, after the lapse of appeal rights or utilization of all available appeals, FEMA
concludes that an amount is owed, then FEMA intends to recover that debt from the
Grantee. You may contact Tom Perry, Public Assistance Branch Chief, at (202) 320-
7583 with any questions about this determination.

Sincerely,
GEORGE F
VANDERSCHMIDT
G. Fred Vanderschmidt
Disaster Recovery Manager
FEMA-4087-DR-CT

Enclosures:
(1) FEMA Public Assistance Determination Memorandum
(2) Administrative Record Index
April 18, 2016

Mr. Dana Conover
State of Connecticut PA Coordinator
25 Sigourney Street, 6th Floor
Hartford, CT 064106

Re: FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

Dear Mr. Conover:

The Town of Fairfield respectfully requests that PW 680 for the Penfield Pavilion be amended to align the PW’s scope of work with that of Fairfield’s final design for the Pavilion. As you are aware, the Town was still in the process of finalizing the design when this PW was issued and obligated.

Attached, please find the scope alignment for the amendment as prepared by The Town of Fairfield’s design engineer/architect DeStefano & Chamberlain, Inc. The PW scope should be amended to reflect the scope as described in the attachment.

Also attached is cost data summary for $915,020.39 for work completed that is mentioned in the original PW but not included in the initial PW obligation as all charges had not been identified at that time. The work completed is largely comprised of stabilization services that were needed immediately after the storm and subsequent coastal studies, engineering design, and construction drawings (which have already been provided to the State). Invoicing and proof of payments will be provided via separate emails by Bruce Smith as these files are numerous.

Thank you again for your continued support in Fairfield’s Disaster Recovery process.

Sincerely,

[Signature]

Director of Public Works
SCOPE ALIGNMENT

FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

The following has been prepared by The Town of Fairfield’s Design Architect/Engineer, DeStefano & Chamberlain, Inc. The information herein summarizes the major components of the scope of work for the project:

A. Pavilion (aka West Wing): The finished portion of the Pavilion will remain intact and be re-utilized. Exterior open decks will be demolished for later replacement with inexpensive on grade boardwalks. The building will be shored on temporary steel beams and cribbing towers, set onto dollies, rolled into the parking lot and parked for several months on additional cribbing braced with guy cables. The old foundations will be picked out of the ground, and be incorporated into the proposed revetment discussed later, to reduce disposal costs. Timber piles will be driven to the required capacity to support building loads and to the embedment required to resist scour, tip elevation -10’ NAVD. Concrete grade beams will be poured to cap the piles and transfer loads to them from the structure. The existing structure will be rolled back into the same position as existing, elevated to meet V zone elevation standard, and supported on new steel columns and beams underneath the building. A portion of the uncovered deck area that was removed will be reconstructed; the majority will be replaced in kind by simple on grade boardwalks as a cost savings measure. New stairs and ramps will be constructed for access to the building. Utilities will be reconnected. All necessary repairs to damage to electrical, HVAC, fire protection, and alarm systems will be performed. Similarly, other damaged items in the building including flooring, walls, and ceilings will be repaired. Also included in the repairs will be the roofing, lighting, and plumbing fixtures. Total enclosed floor area remains the same as existing at 7,470 square feet.

The finish floor will be set at elevation 14.5’ NAVD, resulting in underside of lowest structural member being at or above the BFE of 13.0’ NAVD. The foundation system will be flood-resistant, and will conform to the current Building Code and FEMA model regulations. The underside of the structure will also meet V zone free of obstruction requirements.

B. After a thorough cost comparison by Shawmut (the Town’s selected Construction Manager) it was determined to be more cost effective to demolish and reconstruct the unfinished Locker Wing rather than moving the existing structure twice and elevating it. Existing plumbing and lighting fixtures will be salvaged, and then the building will be demolished. The old foundations will be picked out of the ground, and be incorporated into the proposed revetment discussed later, to reduce disposal costs. Timber piles will be driven to the required capacity to support building loads and to the embedment required to resist scour, tip elevation -10’ NAVD. The move to new construction for this wing allowed a savings on foundation costs as well: timber “split cap” style doubled up beams can be bolted directly to the piles, eliminating concrete work under the building. To reduce the visual impact of the new construction, the exterior wall height was reduced from existing design, and the footprint of the wing was reshaped to more square than the former rectangular building. A program change was made to make the internal renters’ bathrooms smaller, and the external public restrooms bigger. To improve circulation
and beach access, the two wings were separated with a new continuous covered breezeway, to allow beach goers to go from the parking lot to the beach without having to go inside or around the building. The new configuration is a more efficient design with better access to both the locker and restroom facilities and to the beach. A portion of the uncovered deck area that was removed will be reconstructed as covered deck; the majority will be replaced in kind by simple on grade boardwalks as a cost savings measure. New stairs and ramps will be constructed for access to the building. All new M/E/P systems will be installed and tied into the existing Pavilion. Enclosed floor area of the new Locker Wing will be 7,516 square feet, with the roofed over Breezeway with new stair and ramp to parking lot at 1,851 square feet, for a total of 9,367 square feet. This is a reduction of floor area of approximately 3% versus the existing Locker Wing, which is negligible.

C. The exterior wooden deck will be demolished and rebuilt. A new driven wooden pile system will be installed, and a wood deck will be constructed. Due to changes in the flood Zone criteria, the building will be raised to an elevation so that the lowest structural member is above elevation 13. Because there transition between the elevation of the deck and the beach is greater due to increased height of the building, the square footage of the deck has been reduced. Replacing the deck will be a patio set at elevation 12, midway between the elevation of the building height and the beach area adjacent to the building. While not part of the building, it provides for outdoor seating and function, provides an intermediate area between the elevation of the deck and beach sand, and is much less costly to construct than an elevated deck, as no structural components such as timber piles, will be required for construction of the patio. The structured deck up at floor level, both roofed and open, is 5,851 square feet. The patio area is 4,061 square feet. This provides a total outdoor floor area of 9,912 square feet, which is 10% less than existing. This reduction provides site area for landscaping between the building and the parking lot, and between the building and bulkhead. The structured deck was also reduced or eliminated at each end of the building so as to mitigate the concern about blocking neighbor’s views of the water once the building is raised.

D. The parking lot will be regraded by placing low cost road millings to steepen the pitch slightly. This raises the high point of the lot along the front of the building to soften the visual impact of the raised building and reduce the extent of stairs and ramps required from the parking lot level. A new intermediate grade plane will be established under and around the building by placing fill up to elevation 11’ (under) and 12’ (around). This creates a functional transition level to the new building elevation, beach-level recreation spaces adjacent to the Locker Wing and Concession Stand, and continues the dune crest elevation under the building for minimizing flood water entry to the inland costal plane. The footprint of the parking lot and number of spaces are being maintained.

E. The existing timber bulkhead to the beach side on the south will be retained and the openings permanently sealed with whalers and sheeting. The grade on the building side of the bulkhead will be filled flush with the top, at elevation 12.0’. This creates the aforementioned intermediate grade plane that lessens the transition from the building to grade and grade to beach. The bulkhead will be armored with a stone revetment buried below the sand level to act as scour protection and disperse wave energy instead of reflecting off the vertical bulkhead face. Floodwaters will flow freely under the building during severe storm events.
June 30, 2016

Mr. Dana Conover
State of Connecticut PA Coordinator
25 Sigourney Street, 6th Floor
Hartford, CT 064106

Re: FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

Dear Mr. Conover:

The Town of Fairfield respectfully requests that PW 680 for the Penfield Pavilion be amended to align the PW’s scope of work with the Town of Fairfield’s final design for the Pavilion. As you are aware, the Town was still in the process of finalizing the design when this PW was issued and obligated.

Please find the revised scope alignment for the amendment, as prepared by the Town of Fairfield’s design engineer/architect DeStefano & Chamberlain, Inc. The PW scope should be amended to reflect the scope as described in this attachment. Please note this letter supersedes my similar request letter dated 4/18/16. Paragraph E in the previous 4/18/16 Scope Alignment, which pertained to a bulkhead / revetment, has been deleted from the project. This alteration was per the advisement of Connecticut DEEP Office of Long Island Sound; the Town has elected to eliminate this work from the project and this work is no longer planned to be performed. The bulkhead is being removed under an agreement between DEEP and Fairfield concurrently with, but not as part of, the PA project in this document.

Additionally, I have attached a letter from the Town of Fairfield NFIP Coordinator regarding this project.

Thank you again for your continued support in Fairfield’s Disaster Recovery process.

Josephangelo, PE
Director of Public Works
SCOPE ALIGNMENT

FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

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Mr. Dana Conover
Public Assistance Coordinator
CT Division of Emergency Management
and Homeland Security
25 Sigourney Street, 6th Floor
Hartford, CT 06106

June 28, 2016

RE: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT

Dear Mr. Conover:

This letter will confirm that the above captioned pavilion is being constructed in accordance with the requirements of the National Flood Insurance Program. The lowest horizontal structural member will be at or above the base flood elevation with the required open pier foundation to allow the passage of flood waters. There is a breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction.

We concur with the site engineer’s opinion that the design of the building and the site grading is in compliance with the NFIP requirements and squarely meets the guidance provided in FEMA Technical Bulletin #5. This proposal was subject to a public hearing and was approved by the Town Plan and Zoning Commission on June 9, 2015.

Please let me know if you require any additional information.

Very truly yours

James R. Wendt, AICP
Assistant Planning Director,
NFIP/CRS Coordinator
Richard Nicklas
Branch Chief
Floodplain Management and Insurance Branch
FEMA Region I
Mitigation Division
99 High Street, 6th floor
Boston, MA 02110-2320

Exhibit 6

RE: NFIP Technical Review Request - Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, Connecticut

Dear Mr. Nicklas:

The State of Connecticut Department of Emergency Services and Public Protection Division of Emergency Management and Homeland Security (DESPP/DEMHS) and the Department of Energy and Environmental Protection (DEEP) are requesting a technical review for NFIP compliance of the Penfield Pavilion repair project being funded through the Public Assistance (PA) program. Below is a brief history of the project.

Penfield Pavilion was damaged by Superstorm Sandy on October 29, 2012. Following Sandy, the Town of Fairfield submitted a Request for Public Assistance (RPA) for the repair of this facility. FEMA, working with the applicant, began to develop a scope of work (SOW) to repair this facility. Fairfield, at the recommendation of their consultant, Witt O'Brien's, requested that this facility be evaluated for full replacement under the FEMA 50% rule. Upon completion of the evaluation, it was determined that this facility did qualify for total replacement under the 50% rule and FEMA developed and approved DR-4087 PW-680.

Subsequently Fairfield decided instead to repair the existing building and initiated the construction on February 29, 2016 without an official change to the original FEMA Approved replacement SOW. On April 18, 2016, Fairfield submitted a letter to DESPP/DEMHS requesting a revision to the approved SOW for PW-680 to bring the SOW in line with the repair option the town decided to pursue.

Fairfield also applied to the Connecticut Department of Housing (DOH) for Sandy CDBG-DR funds to be used toward the Pavilion repair project. This triggered a DEEP review of the project for a Flood Management Certification (FMC), a state permit required when state funds are utilized for a project located in the 100-year floodplain. DEEP staff questioned NFIP compliance on some aspects of the construction. During the review of the FMC application, DEEP staff visited the site on March 1, 2016 and observed that construction activities had started without an FMC from DEEP. The DEEP Office of Long Island Sound Programs (OLISP) also found that Fairfield had constructed a bulkhead in front of the Pavilion between the time of Tropical Storm Irene (August 28, 2010) and Superstorm Sandy (October 29, 2012) without the requisite coastal site plan review (CSPR), approval and mandatory CSPR referral to DEEP OLISP for comment. This referral is required by the Connecticut Coastal Management Act (CCMA), pursuant to Connecticut General Statute (CGS) §22a-109(d).

On March 9, 2016, CTDEEP held a meeting with the Town of Fairfield, their design consultants, and DOH to discuss concerns with the application, NFIP requirements, state FMC requirements, and coastal
management issues. The plans submitted with the FMC application showed a rip rap revetment was to be installed in front of the bulkhead as part of the current construction activities. At the March 9 meeting, OLISP requested the bulkhead be removed and the revetment not be installed, as it had not been referred to OLISP for comment pursuant to CGS §22a-109(d). In early April 2016, Fairfield’s contractor installed the revetment along the east side of the bulkhead. On April 28, 2016, DEEP staff Diane Ifkovic (State NFIP Coordinator), Stacy Pappano (FMC) and Kristal Kallenberg (OLISP) performed a site visit. The DEEP followed-up with telephone calls and written correspondence requesting that the bulkhead and rip rap revetment be removed. Fairfield is currently in the process of partially removing the bulkhead and rip rap revetment in accordance with an agreement between Fairfield and DEEP OLISP.

The same DEEP staff met with DESPP/DEMHS PA staff Dana Conover and Judy Pahl on Monday, May 9, 2016 to discuss the project. On May 18, 2016, DEEP staff Diane Ifkovic, Stacy Pappano, Kristal Kallenberg, and Brian Thompson (Director of OLISP) and DESPP PA staff Dana Conover and Judy Pahl met with town officials to discuss the various issues surrounding the PA SOW revision and funding issues, bulkhead and revetment removal, and NFIP compliance concerns. At this meeting the town was advised that the PA SOW would need to be revised to reflect the current repair project and the removal of the bulkhead and rip rap. Fairfield asserts that the building construction plans are compliant with NFIP requirements. At this meeting Diane Ifkovic (State NFIP Coordinator, DEEP) expressed concern about the project’s compliance with NFIP requirements, in particular compliance with the free-of-obstruction requirement (Technical Bulletin 5). Dana Conover (PA Coordinator, DESPP/DEMHS) stressed the need for this project to be NFIP compliant and that non-compliance could render the project ineligible for funding under the FEMA PA Program. The design engineer for this project stated that it was his professional opinion that the designs were entirely compliant with all NFIP requirements. After some discussion it was agreed upon by all parties that the best course of action was to request a technical review by FEMA on the compliance of the design plans with the NFIP requirements, in particular Technical Bulletin 5. The goal of this review is to assure all parties of the compliance with NFIP regulations and to avoid any potential eligibility and reimbursement concerns upon completion of the PA project. Therefore, the State of Connecticut DEEP and DESPP/DEMHS are jointly requesting that FEMA Mitigation Division staff and FEMA PA staff review the design plans for NFIP compliance in order that the PA SOW be re-written accurately so that there are no reimbursement issues upon project completion.

This site is in the VE zone with a BFE of 13 feet (see additional information below on FIRMs). From the NFIP compliance perspective, there is very little room for flow through under the building due to the following construction elements which DEEP maintains violates the free-of-obstruction requirement, which is best seen on plan sheet A300:

- Current existing grade is being raised both around and beneath the structure that substantially reduces flow under and through the structure.
- Two feet of new fill is being placed in the rear parking lot to raise the grade so there are fewer steps up into the finished first floor of the structure.
- Stairs have no flow-through, see site plan sheet SP300.
- New fill is being placed under the entire building to bring the elevation up to 11 feet.
- A new 3 foot high retaining wall is being constructed between the building and the parking lot, which runs the entire length of the building, in order to retain the new fill under the building.
- The un-permitted bulkhead and riprap revetment in front of the building has led to a raised, "manufactured" grade in front of the structure that is above the existing grade of the site.

Town officials maintain that the construction is compliant with the NFIP and Technical Bulletin 5, Free-Of-Obstruction Requirements, specifically language on page 21 (Fill) and page 24 (Ground Elevations At Or Above BFE). DEEP, as the regulatory agency, does not consider the amount of fill proposed to be "minor". DEEP is concerned that raising the grade around and beneath the structure, and the construction of retaining walls, violates the free-of-obstruction requirement.

On May 12, 2018, DEEP rejected the FMC application due to insufficiencies and non-compliance with state requirements, see attached letter to DOH. The original PA SOW identified the new structure would be elevated to 2.5 feet above the BFE (BFE 13 feet plus 2.5 feet = 15.5 feet). The repaired Pavilion is being constructed with the lowest structural member at 13 feet and a finished floor at 14.5 feet. In order to comply with state FMC requirements, the Pavilion would need to elevate the lowest horizontal structural member to 14 feet (BFE 13 feet plus 1 foot freeboard) since the structure is located in a VE zone. The Town of Fairfield is unwilling to elevate to the state FMC requirements, therefore DOH Sandy CDBG-DR cannot be utilized for the project.

**Additional information on FIRMs:** FIRM changes also occurred in this area between the time of Tropical Storm Irene and Superstorm Sandy. When Irene hit in late August 2011, the flood map in effect (09001C0438F) was dated June 18, 2010 and the site was in an AE11 flood zone. On July 8, 2013 the revised flood map in effect (09001C0438G) placed the site in a VE 13 flood zone. Fairfield was aware of the impending flood zone change to the site when Sandy hit in late October 2012.

**Town of Fairfield contacts:**
Jim Wendt, Asst. Planning Director & floodplain administrator, (203) 256-3050, jwendt@fairieldct.org
Joseph Michelangelo, Director of Public Works, (203) 256-3010, jmichelangelo@fairieldct.org
Kevin Chamberlain, DeStefano & Chamberlain, (203) 254-7131, kevin@dcstructural.com

Thank you in advance for your attention and assistance in this matter.

Sincerely,

Diane Ifkovic  
State NFIP Coordinator  
CTDEEP

Sincerely,

Dana Conover  
Public Assistance Coordinator  
CTDESPP/DEMHS

Attachments

Cc: J. McDonough
Connecticut Department of Housing  
505 Hudson Street  
Hartford, CT 06106

Attention: Commissioner Evonne Klein

Re: Rejection Notice  
FM-201602179  
Penfield Pavilion  
Fairfield, CT

Dear Ms. Klein:

A meeting was held at the Department on March 9, 2016 regarding your Flood Management Certification application received on February 18, 2016 for the reconstruction of the Penfield Pavilion on Fairfield Beach in the Town of Fairfield. The purpose of the meeting was to discuss the insufficiencies with the application as well as compliance requirements with the Coastal Management Act and State Flood Management Regulations.

An understanding of what was needed to complete the insufficient application was established at the aforementioned meeting. The following summarizes the needed items.

1. Submit a flood contingency plan for the proposed site activities; in particular the actions to be taken for storing the west wing of the existing pavilion in the adjacent parking lot during construction.

2. Submit erosion and control measures and incorporate them into the contract drawings and documents. The measures should be consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control, as revised and the 2004 Connecticut Stormwater Quality Manual.

3. The amount of fill-in the coastal high hazard area (floodplain) and final verses pre-existing conditions and grading needs to be clarified on the plans. The fill and final grading should be evaluated for NFIP compliance.

4. Submit certification from a licensed professional engineer that the structures located below the base flood elevation have been designed to include a breakaway system that will meet NFIP.

5. Update the plans for uniformity with meeting the requirements for a structure in a coastal high hazard area with the lowest portion of the structural members elevated to one foot above the base flood elevation (elev. 14 - NAVD 88).

6. Submit the plans with original date and any revisions for the project with P.E. signature and stamp.
7. Review the proposed structures and fill heights underneath structures to ensure flow through velocities under the building will be adequate to meet NFIP requirements.
8. Submit stormwater management runoff calculations and design schematics.
9. Identify prevention measures for possible impacts during construction to state-listed plant species and the northern diamondback terrapin that were identified in the Natural Diversity Data Base letter dated January 29, 2016.
10. Coordinate any site activities with OLISP for consistency with Connecticut's Coastal Management Act by pursuing a coastal consistency review pursuant to CGS 22a-100.

To date, the identified items relating to flood management regulations and application requirements have not been received. Therefore, your application remains insufficient and is hereby rejected pursuant to Section 22a-3a-2(e) of the Regulations of Connecticut State Agencies.

The Department conducted site visits on March 1, 2016 and April 28, 2016 and saw that the Town of Fairfield had already started the construction of the Penfield Pavilion project. Please be advised that the reconstruction of the Penfield Pavilion as currently designed and being constructed does not meet the requirements of Section 25-68h-2(b)(4) of the Regulations of Connecticut State Agencies (RCSA). Conducting any regulated activity without the required authorization is a violation of the law and is subject to enforcement proceedings including injunction, forfeiture, and applicable penalties.

Should the Town of Fairfield wish to pursue a grant from Department of Housing and wish to reapply in the future, please contact this office to request a pre-application meeting prior to submitting a new application. Any new application for this project should comply with Flood Management Regulations for State Agencies and be consistent with the Coastal Management Act. You are also strongly advised to review the application instructions prior to filing a new application to ensure that any future filing contains all of the documentation necessary to make a sufficient application.

If you have any questions regarding this matter, or the permit process in general, please contact Stacy Pappano at (860) 424-3362 or stacy.pappano@ct.gov.

Cheryl A. Ghare, Director
Inland Water Resources Division

DATE: 5/2/2016

CAC/sp

cc: John Rosenthal, DOH
Joseph Michelangelo, Department of Public Works, Fairfield
Laura Pulie, Engineering Department, Fairfield
Jonathan Richer, Tighe & Bond, Inc.
August 9, 2016

Diane Ifkovic
National Flood Insurance Program Coordinator
Connecticut Department of Energy &
Environmental Preservation
79 Elm Street
Hartford, CT 06106-5127

Dana Conover
Public Assistance Coordinator
Connecticut Department of Emergency
Services & Public Protection
25 Sigourney Street
Hartford, CT 06106-5042

Re: FEMA-4087-DR – Town of Fairfield – PA-ID 001-26620-00 – Project Worksheet 680 –
Restoration of Penfield Pavilion – Potential Violation of the Minimum Requirements of
the National Flood Insurance Program and Failure to Comply with the Terms and
Conditions of the Public Assistance Project Award

Dear Ms. Ifkovic and Mr. Conover:

The purpose of this letter is to respond to your letter of June 1, 2016, in which you requested
technical assistance in reviewing whether the scope of work being pursued by the Town of
Fairfield to restore the Penfield Pavilion complied with the minimum requirements of the
National Flood Insurance Program (“NFIP”). As detailed below, there is concern that the scope
of work being pursued by the Applicant does not appear to comply with the minimum
requirements of the NFIP. There is also concern that the current design, for which the Applicant
has already commenced construction, represents an unauthorized change in the scope of work for
Project Worksheet 680 under the Public Assistance grant for major disaster FEMA-4087-DR and
a violation of other material terms and conditions of the award. In light of these concerns,
FEMA Region I is placing a financial hold on this project and will soon issue a request for
information to support a formal determination under the Public Assistance grant and to guide any
necessary enforcement and corrective actions under the NFIP. This letter does not comprise any
final agency decision or determination.

I. BACKGROUND

A. Minimum Requirements of the National Flood Insurance Program

The National Flood Insurance Act of 1968 authorizes FEMA to offer flood insurance only in
areas where an appropriate public body adopts and enforces floodplain management regulations
that meet the minimum criteria established by FEMA in 44 C.F.R. pt. 60. The definition of a
“community” under the NFIP regulations at 44 C.F.R. § 59.1 is any “state or area or political
subdivision thereof or any Indian tribe or authorized tribal organization, or Alaska Native Village

4022) (“National Flood Insurance Act”).
or authorized native organization, which has the authority to adopt and enforce floodplain management ordinances for the area under its jurisdiction.” A community such as the Town of Fairfield, accordingly, is the basic unit of participation in the NFIP.

FEMA identifies and publishes information on floodplain areas nationwide which have special flood hazards, establishes flood-risk zone data in such areas, and periodically updates flood hazard data in support of the NFIP.² Participating communities must base their floodplain management regulations on the data provided by FEMA, and FEMA must follow certain procedures in establishing projected flood elevations and designating areas of special flood hazard areas that participating communities must adopt.³ FEMA provides this flood hazard data to a community in the form of a Flood Insurance Rate Map (“FIRM”) and Flood Insurance Study (“FIS”) report.

Protecting buildings that are constructed in special flood hazard areas (“SFHAs”) from damage caused by flooding is an important objective of the NFIP.⁴ In support of this objective, the NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, repair of substantially damaged buildings, and substantial improvement of existing buildings in SFHAs. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the FIRM, and identified the coastal high hazard areas on the FIRM. As it relates to the Town of Fairfield, FEMA has issued a FIRM and FIS with the data triggering the requirement for the Applicant to meet, among other things, the regulation at 44 C.F.R. § 60.3(e).

There are several requirements of 44 C.F.R. § 60.3(e) that are particularly relevant to the Applicant’s project to restore the Penfield Pavilion. First, 44 C.F.R. § 60.3(e)(4) requires that all new construction and substantial improvements in V, V1-30, and VE zones must be elevated to or above the base flood elevation ("BFE") on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings and columns) is elevated to or above the base flood level. Second, 44 C.F.R. § 60.3(e)(5) requires that the area beneath these elevated new or substantially improved structures remain free of any obstructions or are constructed with nonsupporting breakaway walls, open wood lattice work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. Third, 44 C.F.R. § 60.3(e)(6) prohibits the use of fill for structural support of buildings within the V, V1-30, and VE Zones.

The Applicant is a participating community in the NFIP and has adopted floodplain management regulations that meet the minimum requirements of 44 C.F.R. pt. 60 in its Zoning Regulations.⁵ These Zoning Regulations require that buildings and structures in flood prone areas as delineated on a FIRM “shall conform” to the standards set forth in Section 32 (entitled “Flood Protection”) and incorporate the requirements of 44 C.F.R. § 60.3(e)(4), (5), and (6) at Section 32.5.c and d.

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² Id. § 1360 (codified as amended at 42 U.S.C. § 4101).
³ Id. § 1363 (codified as amended at 42 U.S.C. § 4104).
⁴ A SFHA is the land in the floodplain within a community that is subject to a 1 percent or greater chance of flooding in any given year. 44 C.F.R. § 59.1.
B. Public Assistance Project for the Restoration of the Penfield Pavilion

The Penfield Pavilion, owned and operated by the Applicant, was a 16,756 square foot single story, wood/steel frame structure that consisted of an east, central, and west wings. Hurricane Sandy damaged the Penfield Pavilion from October 29 to November 9, 2012, and the Applicant applied through the Connecticut Department of Emergency Services and Public Protection ("Grantee") under the Public Assistance grant for major disaster declaration FEMA-4087-DR for financial assistance to restore this damage. Upon receiving the request, FEMA prepared Project Worksheet ("PW") 680 to set forth the disaster damage, scope of work to restore that damage, and estimated cost for that work. The scope of work for the project was the full replacement of the Penfield Pavilion, and FEMA approved PW 680 on December 17, 2015 with total estimated, eligible costs of $4,340,054.11.6

When making the award, FEMA made clear in the text of PW 680 that the Applicant must, upon completion, return the facility to “its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards.” There are two such codes and standards currently at issue that are later discussed in this letter, although there very well may be others implicated. The first is the requirement for the Applicant to comply with Section 32 of the Fairfield Zoning Regulations, which incorporate the requirements of 44 C.F.R. § 60.3. The second is the regulation at 44 C.F.R. § 9.11(d)(6), which provides that “no action may be taken if it is inconsistent with the criteria of the National Flood Insurance Program (49 CFR part 59 et seq.) or any more restrictive Federal, State, or local floodplain management standards.”7

FEMA also made clear in PW 680 that the “current scope of work is…replacement” and that, if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.”8 The scope of work also specifically provided that the new foundation system of the new pavilion will be raised so that the new finish floor elevation “would be 15.5 +/- minimum based on a BFE of 13...” The Applicant, in completing the project, was also required to “comply with all applicable laws and regulations…”, a requirement set forth in the FEMA-State Agreement between FEMA and Connecticut that flows down to the Applicant.9

II. DISCUSSION

You transmitted a joint letter dated June 1, 2016, to the Regional Office concerning the Public Assistance project for the Penfield Pavilion.10 In the letter, you explained that the Applicant decided to repair the Penfield Pavilion instead of replacing it, commencing construction on February 29, 2016, without an official change to the original scope of work for PW 680. You also expressed concern that the revised scope of work did not comply with the minimum

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6 The total estimated cost to replace the facility was $6,583,222 and, following reductions of $2,250,000 for actual insurance proceeds and the mandatory insurance reduction under Section 406 of the Stafford Act, resulted in total estimated, eligible cost of $4,340,054.11.
7 FEMA’s regulations at 44 C.F.R. pt. 9 set forth the policy, procedure and responsibilities to implement and enforce Executive Order 11988, Floodplain Management and Executive 11990, Protection of Wetlands.
8 See also FEMA 322, Public Assistance Guide, pp. 110-111 (June 2007).
requirements of the NFIP, but stated that the Applicant asserts that the building construction plans “are compliant with NFIP requirements” and that the design engineer for the project “stated that it was his professional opinion that the designs were entirely compliant with all NFIP requirements.” Because of the disagreement, you requested that FEMA review the design plans for NFIP compliance “in order that the PA SOW be re-written accurately so that there are no reimbursement issues upon project completion.” You stated that the goal of this review is “assure all parties of the compliance with the NFIP regulations and to avoid any potential eligibility and reimbursement concerns upon completion of the PA project.” Your letter included the current design plans for the Penfield Pavilion.

A. The Design Plans May Fail to Meet the Requirements of 44 C.F.R. § 60.3

The FIRM in effect at the time that FEMA awarded PW 680 establishes that the Penfield Pavilion is in the VE Zone.\(^{11}\) This means that the requirements of 44 C.F.R. § 60.3 apply not only as a federal standard pursuant to 44 C.F.R. § 9.11(d)(6), but also as a local standard pursuant to the Fairfield Zoning Regulations. Upon review of the design documents that you provided, there is concern that the current design of the Penfield Pavilion may not meet the requirements of 44 C.F.R. § 60.3 as briefly summarized below.

**Fill Used for Structural Support.** The regulation at 44 C.F.R. § 60.3(e)(6) prohibits the “use of fill for structural support of buildings within Zones…VE…on the community’s FIRM.” It is the case that, as described in Technical Bulletin 5, the placement of “minor quantities” of nonstructural fill in a VE Zone may be used for landscaping, drainage under and around buildings, and support of parking slabs, pool decks, patios, walkways, and similar site elements.\(^{12}\) Such nonstructural fill must not prevent the free passage of floodwaters and waves beneath elevated buildings.\(^{13}\) Technical Bulletin 5 says that it is generally the case that the addition of 1 to 2 feet of site-compatible, nonstructural fill in a V zone would not lead to adverse effects on buildings, but that amounts over 2 feet should involve the comparison of the proposed final grade to local topography. Here, the design plans show that between 4 and 5 feet of fill will be placed under and around the structure to support grade beams as part of the foundation system, and it is unclear whether such fill constitutes a prohibited use of fill for structural support. The design plans also show that other aspects of the building, such as staircases, could be also be supported by fill.

**Presence of Obstructions.** The regulation at 44 C.F.R. § 60.3(e)(5) provides that all new and substantially improved structures within the VE Zone must have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. This regulation applied to the original FEMA-eligible scope of work, as it called for the Applicant to perform “new construction” of a brand-new pavilion. But the Applicant has instead elected to pursue a repair of the pavilion instead of a replacement,

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\(^{11}\) Flood Insurance Rate Map Panel No. 09001C0438G (effective date of July 8, 2013).
\(^{13}\) Id. at 11.
which raises the question of whether the scope of work comprises a “substantial improvement” so as to trigger the requirements of the regulation.

Our preliminary information indicates that the repair work comprises a substantial improvement. The regulation at 44 C.F.R. § 59.1 defines “substantial improvement” as “any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the ‘start of construction’ of the improvement. . . .” FEMA’s original estimate to repair the pavilion as detailed in Part A of the Cost Estimating Format was $2,090,442.85 (which excluded costs of contingencies and other factors) and the most recent appraised value of the pavilion in 2015 was $1,781,900.\textsuperscript{14} This means that the cost to repair the pavilion appears to be well beyond 50% of the market value of the structure.

Under the assumption that this is a substantial improvement, there is concern that the Applicant is placing obstructions below the base flood elevation. The design plans show that there could be a number items below the base flood elevation that comprise obstructions, such as the fill mentioned in the previous section and concrete stairs filled with crushed stone.

**Lowest Structural Element Below the Base Flood Elevation.** The regulation at 44 C.F.R. § 60.3(e)(4) requires that all substantial improvements in V, V1-30, and VE zones must be elevated to or above the BFE on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings and columns) is elevated to or above the base flood level. Technical Bulletin 5 clarifies that grade beams used to tie together foundation piles or columns to provide additional lateral support are not considered obstructions is placed with their upper surfaces flush with or below the natural grade.\textsuperscript{15} The design plans show that the Applicant will be using horizontal grade beams below the BFE for the repaired pavilion, and it is unclear from the available information whether these beams are flush with the natural grade (which is not prohibited) or whether they are flush with additional fill that was placed on top of the natural grade (which is prohibited).

**B. The Applicant and Grantee May Have Violated the Terms and Conditions of the Public Assistance Project Award**

The Applicant has already commenced the repair of the Penfield Pavilion instead of constructing a replacement building on the same footprint as the original building. In addition, the design plans indicate that the elevation of the lowest floor of the repaired Pavilion will only be 14.5 feet and not the 15.5 feet set forth in PW 680. These are material changes to the approved scope of work for PW 680 and for which the Applicant did not obtain prior Grantee and FEMA approval as expressly required by PW 680. There is concern, accordingly, that the Applicant and Grantee have committed a material violation of the terms and conditions of the award.

There are also other potential violations of the terms and conditions of the project award. First, as detailed above, there is concern that the Applicant has commenced construction for a building with a design that does not meet the requirements of 44 C.F.R. § 60.3, which would violate both 44 C.F.R. § 9.11(d)(6) and the Fairfield Zoning Regulations. Second, it is unclear whether the

\textsuperscript{14} See Town of Fairfield, Assessment of 323 Fairfield Beach Road (available at \url{http://gis.vgsi.com/fairfieldct/Parcel.aspx?Pid=11502}) (last visited Aug. 8, 2016).

\textsuperscript{15} FEMA Technical Bulletin 5, supra note 12, p. 13.
current design falls outside the scope of FEMA’s environmental and historic preservation review for the original FEMA-approved scope of work. For example, it is unclear whether the Applicant obtained a consistency determination under the Coastal Management Act from the Connecticut DEEP pursuant to CGS 22a-100 for the current design in order for FEMA to meet the requirements of the Coastal Zone Management Act ("CZMA"). It is also unclear whether the current scope implicates additional consultation requirements under the Endangered Species Act and National Historic Preservation Act.

III. CONCLUSION

We want to thank you for bringing this matter to our attention. In light of the concerns expressed above, FEMA will be issuing a request for information ("RFI") for this project pursuant to Public Assistance Program procedures to obtain more information before making a formal determination as to whether the current design and construction completed to date violates the requirements of 44 C.F.R. § 60.3, whether the Applicant and Grantee have violated the terms and conditions of the project, and, if so, the appropriate remedy for the noncompliance. In addition to obtaining more information to guide Public Assistance decisions, the information obtained through the RFI process will also be used for NFIP administration purposes. FEMA Region I staff may also need to perform a detailed site visit of the Penfield Pavilion to view the current construction completed to date.

This letter does not comprise a final agency decision or determination. That being said, in view of the potential for disallowance for all costs for this project, FEMA Region I is placing a financial hold on PW 680, such that the Grantee is prohibited from drawing down any funding for the project. The Grantee and Applicant should also carefully consider whether the Applicant should continue performing its construction of the pavilion, as such work could compromise future eligibility.

Sincerely,

Robert Grimmey
Disaster Recovery Manager
FEMA Region I

RICHARD C
NICKLAS
Richard Nicklas
Branch Chief
Floodplain Management and Insurance
FEMA Region I

\[16\] Section 307 of the CZMA and the implementing regulations at 15 C.F.R. pt. 930, subpart F require any applicant for federal financial assistance to obtain a determination from the designated state agency that the scope of work for which the applicant will apply the financial assistance is consistent with a state’s coastal management program. This must occur before the federal agency may provide assistance.
September 30, 2016

Dana Conover
Public Assistance Coordinator
Connecticut Department of Emergency Services & Public Protection
25 Sigourney Street
Hartford, CT 06106-5042

Joseph Michelangelo
Director of Public Works
725 Old Post Road
Fairfield, CT 06824


Dear Messrs. Conover and Michelangelo:

This letter responds to the Connecticut Department of Emergency Services and Public Protection’s (“Grantee”) request to change the scope of work for Project Worksheet #680 under the Public Assistance grant for the major disaster declaration identified as FEMA-4087-DR. The applicant for this project is the Town of Fairfield (“Applicant”) and the project involves the restoration of the Penfield Pavilion as a result of damage caused by Hurricane Sandy. Upon review of the scope change request, there are concerns: (1) whether the requested scope comports with the minimum floodplain management requirements of the National Flood Insurance Program (“NFIP”) and 44 C.F.R. § 9.11(d); (2) that the Applicant has violated the material terms and conditions of the award by commencing the revised scope before notifying and obtaining approval from the Grantee and FEMA; and (3) whether the revised scope of work falls within the scope of a categorical exclusion under the National Environmental Policy Act and comports with other environmental and historic preservation laws. Because of these concerns, FEMA is providing the Grantee and Applicant with 30 days from the date of this letter to provide additional information before FEMA moves forward to make a final determination. This is a request for information.

I. BACKGROUND

A. Scope of Work for Project Worksheet 680 and the Relevant Terms and Conditions of the Award

The Penfield Pavilion, owned and operated by the Applicant, was a 16,756 square foot single story, wood/steel frame structure that consisted of east and central/west wings.
Hurricane Sandy damaged the Penfield Pavilion from October 29 to November 9, 2012, and the Applicant applied through the Grantee under the Public Assistance grant for major disaster declaration FEMA-4087-DR for financial assistance to restore this damage. Upon receiving the request, FEMA prepared Project Worksheet #680 to set forth the disaster damage, scope of work to restore that damage, and estimated cost for that work. FEMA, during project formulation, prepared a Cost Estimating Format ("CEF") and calculated an estimated repair cost of $2,090,442.85 and an estimated replacement cost of $3,833,932.60 in Part A of the CEF. Because the repair cost exceeded 50% of the replacement cost, FEMA concluded that the facility was eligible for replacement. As such, the final scope of work for the project was the full replacement of the Penfield Pavilion and FEMA approved Project Worksheet #680 on December 17, 2015, with total estimated costs of $4,340,054.11.\(^1\) There was nothing in the scope of work for the project concerning the regrading and placement of fill in the parking lot next to the pavilion.

Project Worksheet #680 stated, in relevant part, that the Applicant must, upon completion, return the facility to “its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards.”\(^2\) There are two such codes and standards currently at issue that are later discussed in this letter. The first is the requirement for the Applicant to comply with Section 32 of the Fairfield Zoning Regulations, which incorporate the requirements of 44 C.F.R. § 60.3. The second is the regulation at 44 C.F.R. § 9.11(d)(6), which provides that “no action may be taken if it is inconsistent with the criteria of the National Flood Insurance Program (49 CFR part 59 et seq.) or any more restrictive Federal, State, or local floodplain management standards.”\(^3\)

Project Worksheet #680 also stated that the “current scope of work is…replacement” and that “the existing building will be razed and properly disposed of. The site will [be] groomed and prepped for the construction of a new pavilion built to the specs provided by original Wiles Architect…The new pavilion will be built in the existing footprint on previously disturbed ground and elevated per Codes and Standard Compliance.” The scope of work also provided that the foundation system of the new pavilion will be raised so that the new finished floor elevation “would be 15.5 +/- minimum based on a BFE of 13…. As it related to scope changes, the Project Worksheet unambiguously mandated that if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.” The Applicant, in completing the project, was also required to “comply with all applicable

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\(^1\) The total estimated cost to replace the facility was $6,583,222 and, following reductions of $2,250,000 for actual insurance proceeds and the mandatory insurance reduction under Section 406 of the Stafford Act, resulting in total estimated, eligible cost of $4,340,054.11.

\(^2\) PA-01-CT-4087-PW-00680, p. 5.

\(^3\) FEMA’s regulations at 44 C.F.R. pt. 9 set forth the policy, procedure and responsibilities to implement and enforce Executive Order 11988, Floodplain Management and Executive 11990, Protection of Wetlands.
laws and regulations...", a requirement set forth in the FEMA-State Agreement between FEMA and Connecticut that flows down to the Applicant.  

B. **Scope Change Request and Request for Technical Assistance**

The Grantee transmitted a scope change request to the Regional Office for Project Worksheet #680 on behalf of the Applicant in a letter dated April 29, 2016. During a phone call with FEMA on May 12, 2016, the Grantee informed FEMA that there would be changes and additions to the scope change and asked for FEMA to put the scope change request on hold until it provided additional information. The Grantee then provided a revised scope change request on June 30, 2016, that superseded the request dated April 29, 2016. The following provides a summary of the requested changes:

- **West Wing** — The Applicant stated that the finished portion of the West Wing (referred to as the central/west wing in Project Worksheet #680) will remain intact and re-utilized. The building will be shored on temporary steel beams and cribbing towers and rolled on the parking lot for storage. The old foundations will be picked out of the ground, timber piles will be driven to the required capacity to support building loads and embedment to reduce scour, and concrete grade beams will be poured to cap the piles and transfer loads to them from the structure. The structure will then be rolled back into its old position on top of the new steel columns and beams. Utilities will be reconnected and all necessary repairs to electrical, HVAC, fire protection, and alarm systems will be performed.

- **Locker Wing** — The Applicant stated that it would demolish and reconstruct the unfinished Locker Wing (referred to as the east wing in Project Worksheet 680) rather than moving the structure twice and elevating it. Timber piles will be driven to the required capacity to support building loads and to the embedment to reduce scour. The two wings will be separated by a new continuous covered breezeway.

- **Exterior Wooden Deck** — The exterior wooden deck will be demolished and a new wooden pile system will be installed and wood deck constructed. Because the transition between the elevation of the deck and the beach will be greater due to the increased height of the building (which will now have its lowest structural member at 13 feet), the Applicant will install a patio at an elevation of 12 feet midway between the elevation of the building and the beach.

- **Parking Lot** — The parking lot will be re-graded by placing low cost road

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millings to steepen the pitch slightly. This will raise the high point of the lot along the front of the building and reduce the extent of stairs and ramps required from the parking lot level. A new intermediate grade plane will be established under and around the building by placing fill up to elevation 11 feet (under) and 12 feet (around). The footprint of the parking lot and number of spaces are being maintained.

The Grantee provided a letter from the NFIP/CRS Coordinator from the Town of Fairfield that confirmed that the requested, revised scope complies with the requirements of the NFIP and meets the guidance provided in FEMA Technical Bulletin #5. In that letter, the NFIP/CRS Coordinator stated that the “lowest horizontal structural member will be at or above the base flood elevation with the required open pier foundation to allow the passage of flood waters” and there is a “breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction.” This proposed scope was subject to a public hearing and “was approved by the Town Plan and Zoning Commission on June 9, 2015.”

Separate from the scope change request process, the Grantee and the Connecticut Department of Energy & Environmental Preservation ("CTDEEP") transmitted a joint letter to the Regional Office concerning Project Worksheet 680 on June 1, 2016. In the letter, the Grantee and CTDEEP explained that the Applicant decided to repair the Penfield Pavilion instead of replacing it, commencing construction on February 29, 2016, without an official change to the original scope of work for the project. They also expressed concern that the revised scope of work may not comply with the minimum requirements of the NFIP, although the Applicant asserts that the building construction plans are compliant with NFIP requirements. Because of the disagreement, the Grantee and CTDEEP requested that FEMA review the design plans for NFIP compliance “in order that the PA SOW be re-written accurately so that there are no reimbursement issues upon project completion.” They stated that the goal of this review is “assure all parties of the compliance with the NFIP regulations and to avoid any potential eligibility and reimbursement concerns upon completion of the PA project.” The letter included the current design plans for the Penfield Pavilion.

FEMA responded to the Grantee’s and CTDEEP’s request for technical assistance in a letter dated August 9, 2016. In the letter, FEMA explained that there were concerns

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6 Letter from James R. Wendt, AICP, Assistant Planning Director, NFIP/CRS Coordinator, Town of Fairfield, to Dana Conover, Public Assistance Coordinator, Connecticut Division of Emergency Management and Homeland Security re: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT (June 28, 2016).

7 Letter to Richard Nicklas, Floodplain Management and Insurance Branch Chief, FEMA Region I from Dana Conover, Public Assistance Coordinator, CTDESP/DEMHS and Diane Ifkovic, State NFIP Coordinator, CTDEEP re: NFIP Technical Review Request – Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, Connecticut (June 1, 2016).

8 Letter from Robert Grimley, Disaster Recovery Manager, FEMA Region I and Richard Nicklas, Branch Chief, Floodplain Management and Insurance, FEMA Region I to Diane Ifkovic, National Flood
that the scope of work being pursued by the Applicant may not comply with the Fairfield Zoning Regulations and 44 C.F.R. § 9.11(d)(6), which incorporate the requirements of the NFIP. The letter also explained that the Applicant may have violated the terms and conditions of the project award by commencing a different scope of work (repair) without obtaining prior approval from FEMA and not bringing the lowest floor of the building to an elevation of 15.5 feet. Lastly, the letter explained that it was unclear whether the current design for the pavilion for which construction had already begun fell within the scope of FEMA’s environmental and historic preservation review. In light of these issues, the letter stated that FEMA was placing a financial hold on the project and would issue a request for information to obtain more information before making any final determinations.

II. DISCUSSION

A. Issue 1 – Compliance with the Applicant’s Zoning Regulations and 44 C.F.R. pt. 9

The Applicant is a participating community in the NFIP and has adopted Zoning Regulations that meet the minimum requirements of 44 C.F.R. pt. 60. The NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, repair of substantially damaged buildings, and substantial improvement of existing buildings in special flood hazard areas. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the Flood Insurance Rate Map (“FIRM”), and identified the coastal high hazard areas on the FIRM. As it relates to the Town of Fairfield, FEMA has issued a FIRM and Flood Insurance Study (“FIS”) with the data triggering the requirement for the Applicant to meet, among other things, the regulation at 44 C.F.R. § 60.3(e). There are three requirements under 44 C.F.R. § 60.3(e) that are particularly relevant to the Applicant’s project to restore the Penfield Pavilion.

First, the regulation at 44 C.F.R. § 60.3(e)(5) provides that all new and substantially improved structures within the VE Zone must have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion.

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of the building or supporting foundation system. The regulation at 44 C.F.R. § 59.1 defines “substantial improvement” as “any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the ‘start of construction’ of the improvement. . . .”

Second, the regulation at 44 C.F.R. § 60.3(e)(4) requires that all new construction and substantial improvements in V, V1-30, and VE zones must be elevated to or above the base flood elevation (“BFE”) on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings and columns) is elevated to or above the base flood level. Technical Bulletin 5 clarifies that grade beams used to tie together foundation piles or columns to provide additional lateral support are not considered obstructions if placed with their upper surfaces flush with or below the natural grade. 10

Third, the regulation at 44 C.F.R. § 60.3(e)(6) prohibits the “use of fill for structural support of buildings within Zones…VE…on the community’s FIRM.” It is the case that, as described in Technical Bulletin 5, the placement of “minor quantities” of nonstructural fill in a VE Zone may be used for landscaping, drainage under and around buildings, and support of parking slabs, pool decks, patios, walkways, and similar site elements. 11 Such nonstructural fill must not prevent the free passage of floodwaters and waves beneath elevated buildings. 12 Technical Bulletin 5 says that it is generally the case that the addition of 1 to 2 feet of site-compatible, nonstructural fill in a V zone would not lead to adverse effects on buildings, but that amounts over 2 feet should involve the comparison of the proposed final grade to local topography.

The current FIRM establishes that the Penfield Pavilion is in the VE Zone. 13 The Fairfield Zoning Regulations, in turn, require that buildings and structures in flood prone areas as delineated on a FIRM “shall conform” to the standards set forth in Section 32 (entitled “Flood Protection”) and incorporate the requirements of 44 C.F.R. § 60.3(e)(4), (5), and (6) at Section 32.5.c and d of the Fairfield Zoning Regulations. Furthermore, the requirements of 44 C.F.R. § 60.3 apply not only as a local standard pursuant to the Fairfield Zoning Regulations, but 44 C.F.R. § 9.11(d) also requires that all Public Assistance projects adhere to that regulation. The regulation at 44 C.F.R. § 9.11(d) provides that FEMA will not provide financial assistance for any activity if it is “inconsistent with the criteria of the National Flood Insurance Program (44 CFR part 59 et seq.) or any more restrictive Federal, State or local floodplain management standards.” The regulation also provides that new construction and substantial improvement of

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11 Id. at 21-22.
12 Id. at 11.
13 Flood Insurance Rate Map Panel No. 09001C0438G (effective date of July 8, 2013).
structures “shall be elevated on open works (walls, columns, piers, piles, etc.) rather than on fill, in all cases in coastal high hazard areas…”

The Grantee and Applicant have not provided sufficient information for FEMA to determine whether the Applicant’s proposed design complies with the minimum requirements of 44 C.F.R. § 60.3(e)(4)-(6) and, by necessary implication, the Fairfield Zoning Regulations and 44 C.F.R. § 9.11(d). Because of the lack of necessary information, FEMA requests that the Applicant and Grantee provide responses to the following questions in order to enable FEMA to make a final determination.

1. Has the Applicant made a substantial damage or substantial improvement determination for the pavilion? If so, please provide that written determination.

2. What was considered to be the natural grade elevation of the site for the repair and reconstruction of the pavilion? Please include elevation datum.

3. What was the basis/source for determining the natural grade elevation of the site? Please provide data used for this determination.

4. Was structural or non-structural fill used to create the “platform” that the pavilion will be situated on?

5. Does the following drawing accurately depict current as-built conditions at the project site?

   *Penfield Pavilion, Site Sections, Dwg #: SP400, 6/21/2016, by DeStefano & Chamberlain*

   If not, please provide an updated drawing that depicts the as-built conditions.

6. Will the stairs and ramps be designed and constructed to allow for the free passage of flood waters and not create an obstruction to flow? If so, please provide design details.

B. **Issue 2 – Compliance with the Other Terms and Conditions of the Public Assistance Project Award**

FEMA’s former regulations at 44 C.F.R. pt. 13 set forth uniform administrative rules for grants and subgrants to state and local governments and FEMA made compliance with these regulations a condition of the Public Assistance grant.\(^{14}\) The

\(^{14}\) FEMA-State Agreement, Exhibit B (General Conditions), ¶ 3 (“The State agrees to comply with the requirements of laws and regulations found in the Stafford Act and 44 CFR.”); Exhibit C, Article III (“The Grantee agrees to comply with all applicable laws and regulations, including but not limited to the following laws, regulations, and OMB circulars that govern standard grant management practices and are
Grantee agreed to these requirements as part of the FEMA-State Agreement for FEMA-4087-DR and through accepting the Public Assistance project award and these requirements “passed through” to the Applicant. Under 44 C.F.R. § 13.30(d)(1), a grantee and subgrantee must obtain the prior approval of FEMA before any revision of the scope or objectives of a Public Assistance construction project and the Public Assistance Guide further reinforced the requirement for FEMA prior approval for changes in scope of work. In addition to the regulatory and policy requirements, FEMA made clear in Project Worksheet #680 that the “current scope of work is...replacement” and that, if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.” Failure to follow this requirement is a material violation of the terms and conditions of the Public Assistance grant and FEMA may, in such circumstances, take any number of enforcement remedies, including award termination.

The information provided to FEMA makes clear that the Applicant will not be conducting a replacement of the pavilion, but rather repair, and also confirms that the Applicant has already commenced work on the revised scope and never requested permission from FEMA through the Grantee before commencing that work. The Applicant, therefore, has committed a material violation of a term and condition of the Public Assistance award. As such, the Applicant and Grantee should provide any information that it feels appropriate in explaining why the Applicant committed the violation to be considered by FEMA’s in making its enforcement decision.

Project Worksheet #680 also provided that the foundation system of the new pavilion would be raised so that the new finished floor elevation “would be 15.5 +/- minimum based on a BFE of 13....” In setting this design standard, the Project Worksheet indicates that this 15.5 foot elevation was a result of “conversations and recommendations from the Town consultants” of a “freeboard of 2 feet” and that the Fairfield Zoning Regulations have no such freeboard requirement. Because there is no federal standard that would require an elevation beyond the BFE for the location, it would appear that, based on the information in the administrative record, the increased elevation may have been at the request of the Applicant and not required by any applicable code or standard. Therefore, the Applicant and Grantee should provide

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incorporated into this Agreement by reference. ...Title 44 of the Code of Federal Regulations, which includes Part 13, FEMA’s implementation of OMB Circular A-102 – Uniform Administrative Requirements for Grants and Cooperative Agreements with State and Local Governments...”).

44 C.F.R. § 13.30(d)(1) (2012) (“(d) Programmatic Changes. Grantees and subgrantee must obtain the prior approval of the awarding agency whenever any of the following actions is anticipated: (1) Any revision to the scope or objectives of the project...”).


responses to the following questions in order to guide FEMA’s decision as to the unapproved revision to the scope of work:

(1) What is the final elevation going to be of the lowest structural member of the repaired pavilion?

(2) What is the minimum elevation that the Fairfield Zoning Regulations require for the lowest structural member of the pavilion?

(3) Do the Connecticut regulations for Floodplain Management for State Agencies apply to the subgrant under the Public Assistance grant awarded by the Grantee to the Applicant for the restoration of the pavilion?18 If no, then please provide a detailed explanation.19 If yes, what is the minimum elevation that these regulations require for the lowest structural member of the pavilion?20

C. Issue 3 – Environmental and Historic Preservation

FEMA must consider and comply with a range of federal laws, regulations, and executive orders concerning environmental protection and historic preservation when providing financial assistance under the Public Assistance grant and the size and type of the project and project site and conditions generally determine the level of review that must be performed. There are three such statutes potentially implicated by the Applicant’s commencement of the unapproved change in the scope of the work to repair the pavilion.

*National Environmental Policy Act.* The National Environmental Policy Act ("NEPA") requires every federal agency to follow a specific planning process to ensure that an agency has considered and the general public is fully informed about the consequences of a proposed federal action, such as the approval of permanent work project under the Public Assistance grant for a major disaster. This review and consultation process is used to evaluate the impact of a project and any possible alternatives may have on the environment, and FEMA must complete this process before it approves a project.

FEMA’s regulations regarding NEPA were set forth at 44 C.F.R. pt. 10 at the time it awarded Project Worksheet #680. However, since the time of award, FEMA has rescinded 44 C.F.R. pt. 10 and the applicable NEPA implementing procedures are set forth in DHS Directive No. 023-1, rev. 1, *Implementation of the National Environmental Policy Act* (Oct. 31, 2014); DHS Instruction No. 023-01-001-01, rev. 1, *Implementation*

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18 See Regulations, Conn. State Agencies, §§ 25-68h-1 to 3.
19 See Regulations, Conn. State Agencies §§ 25-68h-1(c)(1) ("...Any agency providing grants...for an activity shall also demonstrate its ability to guarantee that all requirements of Section 25-68d of the General Statutes and Section 25-68h-1 through 25-68h-3, inclusive, of these regulations will be complied with by the person or persons receiving the grant...") (emphasis added).
of the National Environmental Policy Act (NEPA) (Nov. 6, 2014); FEMA Directive No. 108-1, Environmental Planning and Historic Preservation Responsibilities and Program Requirements (Aug. 22, 2016), and FEMA Instruction No. 108-1-1, Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements (Aug. 22, 2016) (collectively, “DHS and FEMA NEPA implementing guidance”).

The NEPA does not require that FEMA limit the impacts of a project on the environment nor require FEMA to only fund the alternative that has the least environmental impact—it does, however, require that FEMA makes the decision to fund a project in an informed manner. There are four potential outcomes or levels of NEPA review, which are statutory exclusion, categorical exclusion, environmental assessment, and environmental impact statement. A statutory exclusion means that no NEPA review is required; for the other three categories, the degree of potential environmental impact determines the level of review and documentation required.

Occasionally FEMA funding is requested for an action that has been initiated and/or completed before environmental review and documentation as required by NEPA and DHS and FEMA NEPA implementing guidance. This situation also arises where FEMA does complete its NEPA review for a project but then, following award, an applicant revises its scope of work without seeking FEMA review and approval. In these circumstances, FEMA will conclude that the project complies with NEPA requirements if it qualifies for a statutory exclusion or qualifies for a categorical exclusion in DHS Instruction No. 023-01, Appendix A and is found free of extraordinary circumstances that require consultation under other environmental and historic preservation laws and regulations. If it does not, then FEMA will not provide any funding for the project.

FEMA originally determined that the replacement of pavilion on its existing footprint was “categorically excluded” from the need to prepare an Environmental Impact Statement or Environmental Assessment pursuant to 44 C.F.R. § 10.8(d)(2)(xv) (2015). This regulation provided a categorical exclusion from NEPA for “Repair, reconstruction, restoration, elevation, retrofitting, upgrading to current codes and standards, or replacement of any facility in a manner that substantially conforms to the pre-existing design, function, and location.” This categorical exclusion, however, no longer exists, and FEMA must evaluate the revised scope of the Applicant to determine whether it falls...

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23 As detailed in the previous paragraph, FEMA’s implementing regulations for the NEPA at 44 C.F.R. pt. 10 have since been rescinded and replaced with DHS and FEMA implementing guidance.
within the scope of the categorical exclusions under the DHS and FEMA NEPA implementing guidance". 24

**National Historic Preservation Act.** Section 106 of the National Historic Preservation Act ("NHPA") requires FEMA to consider the effects of its activities (known as "undertakings") on any historic property and to afford the Advisory Council on Historic Preservation ("ACHP") an opportunity to comment on such projects before the expenditure of any federal funds. 25 A Public Assistance project is an "undertaking" for the purposes of the NHPA, and a historic property is any property that is included in, or eligible for inclusion in, the National Register of Historic Places ("NRHP"). NRHP-listed or -eligible properties fall into five broad categories: buildings, structures, sites, objects, and districts.

During the required NHPA review process for a Public Assistance project, FEMA will identify the area of potential effect, which is the geographic area(s) within which a project may directly or indirectly effect historic properties. If there are historic properties, then FEMA, in consultation with the consulting parties (the Grantee, Applicant, State Historic Preservation Officer ("SHPO")/Tribal Historic Preservation Officer ("THPO"), and others as appropriate) and the public to assess whether the project will adversely affect historic properties. An adverse effect occurs when a project may directly or indirectly diminish the integrity of an historic property by altering any of the characteristics that qualify that property for inclusion on the NRHP. If the project will not adversely affect historic properties, then FEMA refrains from further NHPA review. Alternatively, if there will be adverse effects to historic properties, then FEMA will explore ways to avoid or mitigate adverse effects to historic properties in consultation with the consulting parties and the public.

FEMA determined that the pavilion was not "not of exceptional merit and does not meet the minimum 50 year age requirement for inclusion on the National Register." Based on this determination that the pavilion is not eligible for listing on the NRHP and that all work would be performed on already disturbed ground, FEMA determined when reviewing the original scope of work for replacement that it did not need to conduct any additional consultation with the SHPO pursuant to the Programmatic Agreement between FEMA and the State.

**Coastal Zone Management Act.** FEMA’s requirements under the Coastal Zone Management Act ("CZMA") when providing financial assistance under a Public

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24 A "categorical exclusion" is a category of actions which do not individually or cumulatively have a significant effect on the human environment and for which neither an environmental assessment nor an environmental impact statement is required. 40 C.F.R. § 1508.4.

Dana Conover and Joseph Michelangelo

Assistance Grant are laid out in Section 307(d) of the CZMA\textsuperscript{26} and Subpart F of 15 C.F.R. pt. 930. The law and regulations place the responsibility on a local government applicant to submit for consistency review the proposed project receiving assistance to the cognizant state agencies.\textsuperscript{27} If the cognizant state agency objects to the local government’s application, then the federal agency is prohibited from providing financial assistance except under narrow circumstances. The Record of Environmental Consideration (“REC”) for Project Worksheet 680 provided that the Applicant is responsible for “coordinating and obtaining any permits from the [CTDEEP] prior to initiating work.”

\textbf{Request for Information.} It is unclear from the information provided whether the current repair scope of work that the Applicant has already commenced qualifies for a categorical exclusion in DHS Instruction No. 023-01, Appendix A. It is also unclear whether the Applicant obtained the required consistency determination from the CTDEEP pursuant to as required by the CZMA. The Grantee and Applicant, therefore, should provide responses to the following questions:

1. Is the repaired pavilion going to be located entirely within the footprint of the original building? Please provide schematics, drawings, and/or pictures that show the before and after footprints, to include a drawing with the footprint of the restored pavilion superimposed on the pavilion’s original footprint.

2. Is the work to be performed only occurring on previously disturbed ground? This includes any movement of and staging of the West Wing.

3. What is the total acreage of the project area, including all areas for staging?

4. What is the source of fill that will be installed at the site? Please provide documentation that all fill was obtained from an authorized site and free from any contamination and archaeological resources.

5. Did the Applicant obtain a consistency determination under the Connecticut Coastal Management Act from CTDEEP for the current design before the Applicant commenced work? If so, please provide the relevant documentation from CTDEEP.

\textbf{III. CONCLUSION}

FEMA is providing the Grantee and Applicant with 30 days from the date of this letter to provide responses to the questions presented and associated requests for documentation. After receiving the information or at the expiration of the 30 days,


\textsuperscript{27} 15 C.F.R. §§ 930.94 and 97.
whichever occurs first, FEMA will move forward to make a final determination. If you have any questions in regard to this request for information, please feel free to contact me at George.Vanderschmidt@FEMA.DHS.gov.

Sincerely,

GEORGE F VANDERSCHMIDT
G. Fred Vanderschmidt
Disaster Recovery Manager
FEMA-4087-DR

GFV/ks/rss
Dear Mr. Vanderschmidt:

This letter and the attached documents are in response to your September 30, 2016 letter regarding the Restoration of Penfield Pavilion - Project Worksheet 680. Said letter was a response to the Connecticut Department of Emergency Services and Public Protection’s (“Grantee”) request to change the scope of work for the above-referenced Project Worksheet.

Specifically, this response answers the fourteen specific questions posed in your letter regarding your three areas of concern: (1) whether the requested scope comports with the minimum floodplain management requirements of the National Flood Insurance Program (“NFIP”) and 44 CFR §9.11(d); (2) that the Applicant has violated the material terms and conditions of the award by commencing the revised scope before notifying and obtaining approval from the Grantee and FEMA; and (3) whether the revised scope of work falls within the scope of a categorical exclusion under the National Environmental Policy Act and comports with other environmental and historic preservation laws. It also specifically addresses these three areas of concern. The information contained herein is provided to aid you in making the determination as to whether to allow the requested change of scope.

By way of background, the Town received your letter on or around October 3, 2016 and, in an effort to be as responsive as possible, I gathered the following individuals to ensure the town provided as responsive information as possible:

Michael C. Tetreau
First Selectman
Office of the First Selectman
Fairfield, Connecticut 06824

George F. Vanderschmidt
U.S. Department of Homeland Security
FEMA Region 1
90 High Street
Boston, MA 02110

Re: Your letter of September 30, 2016 re FEMA-4087-DR – Project Worksheet 680 – Restoration of Penfield Pavilion – Change in Scope of Work - Request for Information
1) Joe Michelangelo – Fairfield Director of Public Works;
2) Jim Wendt – Assistant Planning Director, NFIP/CRS Coordinator, Town of Fairfield;
3) Kevin Chamberlin – Professional/Structural Engineer;
4) Robert Mayer – Fairfield Chief Fiscal Officer;
5) Bruce Smith - Witt O'Brien – Fairfield Penfield Consultant.

Based on information provided by those set forth above, the Town provides this response that it believes answers, in a satisfactory manner, your questions. It needs to be stated that the Town is very concerned about being both responsive to and compliant with FEMA, CTDEEP, NFIP and CTDESPP/DEMHS questions and regulations.

As you are aware, Super Storm Sandy caused severe damage to the Penfield Pavilion in October 2012. As you are further aware, Penfield Pavilion is an approximately 27,557 square foot structure situated on Penfield Beach. The structure consists of approximately 6,756 square foot main structure, 10,000 square foot locker room, and a 10,881 square foot deck surrounding the building.

The answers to the fourteen questions, together with supporting documentation, are set forth in Appendices A, B and C to this letter, grouped in the same manner as they are set forth in your letter. The responses to your three specific areas of concern are set forth below, with supporting documentation in the appendixes and exhibits.

At the outset, it is important to determine the scope of work set forth in the original PW. The key phrase in that document would seem to be: “Scope of Work is for replacement of the facility to pre-disaster footprint, form and function as per the attached original building plans.”

Further guidance as to what is meant by scope of work can be found in the PW, which provides:

WORK TO BE COMPLETED: Upon completion, this site will be returned to its original design, function and capacity within the original footprint, meeting all appropriate Codes and Standards. Acquiring all necessary Federal, State and local permits is required for Federal Funding. Noncompliance with this requirement may jeopardize the receipt of Federal Funds.

The PW also states:

ELIGIBLE REPLACEMENT COSTS

FEMA will restore an eligible facility to its pre-disaster design. Replacement Cost includes the costs for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with current codes and standards. This includes demolition, disposal, and elevation above new FEMA flood height. FEMA will not fund additional capacity necessary due to increased population or use, even if required by code.
Codes and Standard compliance would be warranted for the foundation system costs to raise the lowest horizontal member above the Base Flood Elevation (BFE) of 13 (VE zone). The Town currently does not have an ordinance for freeboard requirements.

It is respectfully claimed that the Town has complied with these requirements, in that the replacement facility is of the same size, design capacity and function as the original (including some very minor modifications).

The plans which were used to develop the PW were the plans for the building in its pre-disaster state. The requested changes do not materially increase the size or capacity of the facility, nor change its function. The changes are primarily designed to prudently effectuate the saving of both local and federal taxpayer funds, allow better access to the pavilion and allow the building to be replaced more expeditiously.

A major issue, expressed in your questions, seems to be that you are concerned that any proposed changes in the scope of the building might run afoul of the protections provided by the various regulations, and thereby subject the structure to possible damage. I wish to make it very clear that the requested changes do not, in any way, put the structure out of conformity with any of the pertinent standards or regulations. As will be discussed, the elevation of the bottom of the lowest structural member will be at 13.08' NAVD, which is slightly above the required 13'. The area of the building remains virtually the same. The building is located in the same footprint as the original, and does not extend into previously undisturbed soil. The way the building is situated and supported remains the same. The only change from the original plan is that the Finished Floor Elevation ("FFE") of the building is reduced by one foot; however, although it was addressed in the Scope Alignment Request, this is not really a change in scope, as there is no FFE standard for buildings in a VE zone. The parking lot is being regraded and raised slightly, but this is not a material change, and again, no previously undisturbed soil is being disturbed.

Taking the concerns expressed in your letter in order:

(1) Does the requested scope change comport with the minimum floodplain management requirements of the National Flood Insurance Program ("NFIP") and 44 CFR §9.11(d)?

Yes, the changes do comport with these provisions.

With regard to NFIP compliance, as you point out at page 4 of your letter, on June 28, 2016, after the initial request for scope change, James Wendt, who is the Fairfield NFIP/CRS Coordinator, sent a letter to Dana Conover at DEMHS, stating that the pavilion was being constructed in accordance with the National Flood Insurance Program. (Exhibit 3)
In their letter of June 1, 2016, Ifkovic and Conover questioned whether the changes complied with NFIP and asked for FEMA’s technical assistance in making the determination. On August 9, 2016, Robert Grimley and Richard Niklas of the FEMA Region 1 office replied to them and again questioned NFIP compliance.

In his letter of October 26, 2016 Kevin Chamberlain, the Town’s structural engineer, confirms compliance with the NFIP, stating: “In my opinion as a professional engineer with extensive experience in the design of building structures in coastal high hazard areas, along Fairfield Beach in particular, this project conforms to the NFIP, Town of Fairfield Zoning Regulations, the State of Connecticut Building Code, and referenced standard ASCE24 “Flood Resistant Design and Construction” (Exhibit 2).

With regard to 44 CFR 9.11(d), Kevin Chamberlain has reviewed the pertinent portion of that section of the regulations, and has responded as follows:

The project meets each of the numbered subsections as summarized below:

1. Is building a functionally dependent use or facilitates an open space use? YES, publicly accessible beach pavilion.
2. Is bottom of lowest structural member elevated to BFE, and structure anchored to resist waves, flotation, etc., etc.? YES and YES.
3. Bottom of lowest structural member elevated to BFE? YES.
4. Floodway requirements – Not applicable to this site, floodway is a riverine condition
5. Are alternative sites available outside the floodplain? NO, functionally dependent on beach access. Harm within floodplain minimized? YES, building is elevated and anchored to resist effects of flooding.
6. Is there anything more stringent than these regs in the NFIP, or state, federal, or local standards? NO.
7. Is the building elevated on piles? YES.
8. Is emergency preparedness addressed? YES, TOF has Emergency management plan for the floodplain district.
9. Relocation of contents? N/A, because none of the contents were damaged, and the building will now be elevated with all contents above BFE.

(2) Did the Applicant violate the material terms and conditions of the award by commencing the revised scope before notifying and obtaining approval from the Grantee and FEMA?

On January 5, 2016 FEMA, through CTDEMHS, issued the Town of Fairfield PW 680 and authorized the Town to begin work within the approved Scope of Work. Included in the PW was that the Town was to demolish the current Penfield Pavilion, prepare the site, and raise the structure from 11’ BFE to 13’ BFE.
Almost immediately after receiving the PW, it was realized that a scope change would have to be applied for. When the plans which were actually used for the construction of the new pavilion were drawn, it was determined that although the majority of the original pavilion (Approximately 20,000 of 27,000 square feet) would be demolished and rebuilt, the West Wing portion of the building contained some very costly components the reuse of which presented the opportunity for substantial cost (and time) savings. Even if the West Wing were to have been demolished, it would not have simply been bulldozed, but would have been dismantled, at a substantial cost, so that these components could be salvaged. It was therefore determined that the building would be moved into the parking lot, a new, properly elevated and constructed foundation built, and the building moved back onto the foundation. Where required, new components would be installed in the building. Therefore, the Town almost immediately had discussions with Dana Conover regarding the need to secure a Scope Alignment. These talks culminated in the initial scope alignment request of April 18, 2016, which was modified on May 11, 2016 and June 30, 2016 (Documents are attached as Exhibit 8).

The Town began work on the project on February 29, 2016. The initial work that was performed involved demolishing the locker wing and deck, and driving piles for the new structure, as well as some site and preparation work. This work was clearly within the Scope of Work for which Fairfield was authorized.

The final request for scope alignment was sent on June 30, 2016. In late spring or early summer the West Wing was moved off its foundation into the parking lot. The old foundation was removed and piles driven and grade beams constructed to support the West Wing. Again, all of the foundation work was part of the original scope.

So, while the PW provides that the Town would raze entire pavilion, including the West Wing (consisting of approximately 6,750 square feet) and build a new one, it was determined that it was more cost effective and would be more expeditious to move the existing building into the parking lot, and build a new foundation, raised to the proper elevation, and move the building back. This would reduce overall costs and allow the work to be done in a shorter period.

While there is no question that the initial scope alignment request was sent after work had commenced, as previously stated, the initial work was preparatory in nature, and was within the scope of the PW. At this point, the building was not restored to its finished location.

There were practical reasons for the commencement of work before receiving a response to the request for scope alignment. For the Town to stop or delay work, the project would have had to be rebid, with the chance that the cost would have been increased dramatically to both the Town and FEMA. By continuing the work, the Town provided the best possible result for all stakeholders, including the Town, FEMA, residents, contractors, and employees.
Additionally, by beginning the work, the Town reduced the risk of additional damage to the main structure from future storms. It was the Town’s belief at the time that all of those factors actually were a benefit to all parties.

(3) **Does the revised scope of work fall within the scope of a categorical exclusion under the National Environmental Policy Act and comport with other environmental and historic preservation laws.**

You point out at page 10 of your letter that FEMA originally determined that the replacement of pavilion on its existing footprint was “categorically excluded” from the need to prepare an Environmental Impact Statement or Environmental Assessment. You point out that that categorical exclusion no longer exists. However, the requested scope changes do not change the size or location of the building on the existing footprint, but rather the method of construction. Consequently there should be no need to re-evaluate the project pursuant to these criteria.

Although there are no specific questions in your letter regarding the actual Alignment of Scope Request, or the actual process involved in this grant, the Town would like to provide comments for your consideration.

The Scope Alignment Request contained four separate requests:

A. To keep intact and reuse the West Wing of the Pavilion, and lower the FFE to 14.5 feet.

B. To demolish and rebuild the locker wing.

C. To demolish and rebuild the exterior wooden deck.

D. To regrade the parking lot.

(A fifth request, to retain and repair an existing bulkhead, was deleted after DEEP requested that the bulkhead be removed, which the town did.)

Although items B., C., and D. are contained in the requests for scope alignment, they are actually part of the original scope of work, and authorized by the PW. Therefore it would not actually be necessary to include them in the scope alignment.

Item A. does constitute a change in scope, because the PW does call for the razing of the pavilion, and construction of a new one, and also calls for a FFE of 15.5’.

In the comments section of the PW dated 9/3/14, it states: “Once the replacement cost version is completed, the Town of Fairfield will determine the most cost effective method of mitigating the damages incurred during Hurricane Sandy”. As discussed above, there were practical reasons for this request for change of scope, primarily the anticipated cost savings.
With regard to the lowering of the FFE from 15.5 to 14.5, the approved Scope of Work provided that the Town would replace Penfield Pavilion and raise the structure so that the bottom of the lowest structural member was at the BFE of 13 feet.

As set forth in your letter, the appropriate regulation requires that all new construction and substantial improvements in a VE zone must be elevated to or above BFE on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings and columns) is elevated to or above. As set forth in the answers to questions herein, the pavilion meets this requirement. The bottom of the lowest structural member is at BFE of 13.08 feet NAVD (Appendix B, Question 1.)

Your letter references that the new finished floor elevation (FFE) was to be at 15.5 based on a BFE of 13. Because of the design of the original building, with girders supporting the floor joists, there was 2.5 feet between the bottom of the girders and the finished floor, which would have resulted in an FFE of 15.5 with the bottom of the lowest structure at 13.

However, in order to reduce the apparent bulk of the building, satisfy neighbors and reduce the size of staircases and ramps, making access to the building easier for all, including those with disabilities, and actually make the building more wind resistant, the girders were notched, resulting in a lowering of the FFE to 14.5. This also reduced the overall height of the building.

This reduction does not violate any applicable standard or regulation because in a VE zone, there is no standard regarding FFE. It is therefore respectfully submitted that this is not a material deviation from the PW.

It is clear that the Town reconstructed Penfield Pavilion to the precise footprint, form and function as it was before the storm and in compliance with all current federal, state, and local zoning laws and regulations. In addition, the Town’s reconstruction of Penfield Pavilion was completed in the most cost efficient and timely manner possible.

The only changes from the initial statement of work authorized on January 5, 2016 were to salvage much of the 6,700 square foot main building in an effort to save money and reduce the overall cost and time of construction and to reduce the FFE elevation from 15.5’ to 14.5’ in an effort to reduce the height of the staircase and ADA compliant access ramps. These changes were detailed in the April 18, 2016 and subsequent requests for Alignment of Scope submitted by the Town of Fairfield.

In conclusion, the only changes the Town made were in methodology in an effort to reduce costs and to make the Pavilion more handicap accessible. The reconstructed Penfield Pavilion returns the facility to substantially the same pre-disaster footprint, form, and function.
I hope that this letter clearly answers your questions and concerns and explains the Town's position and I, and/or my staff, would be happy to provide any other information which you may require. I am pleased to meet with you should you so desire.

Thank you for your consideration in this matter.

Sincerely,

[Signature]

Michael C. Tetreau
First Selectman
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APPENDIX A
Appendix A

Issue 1 – Compliance with the Applicant’s Zoning Regulations and 44 C.F.R. pt. 9:

1) Has the Applicant made a substantial damage or substantial improvement determination for the pavilion? If so, please provide that written determination.

   The Town has not made a substantial damage or substantial improvement determination for the pavilion. Upon the Town making a determination to raise the pavilion to become FEMA compliant in support of its application for federal funding, the Town determined that a determination was not necessary.

2) What was considered to be the natural grade elevation of the site? Please include elevation datum.

   The natural grade of the site is the dune topography that once existed between Long Island Sound and Fairfield Beach Road before the site was first built on in the early 1900s, then disturbed by demolition and new construction in the 2000s, and finally scoured by Hurricanes Irene and Sandy in 2011 and 2012.

   The dune crest elevation varies from el. 10.0’ to 12.0’ NAVD across the Town-owned property, which stretches from Rickard’s Beach to the Durrell Pavilion. The building straddles the dune. The average grade around the perimeter of the building is 11.0’ NAVD, and under the building it is 10.8’ NAVD. Under the West Wing of the building, concrete grade beams were used, driven by the logistics of moving the building onto the new foundation.

   The top of grade beams are set at elevation 10.7’ NAVD, which is at or below the reestablished natural grade. At no point is any grade beam above grade.

   See, also, Exhibit 2.

3) What was the basis/source for determining the natural grade elevation of the site? Please provide data used for this determination.

   Site transects taken to the east and west of the subject building were used to reestablish the natural topography under and around the building.

   See, also, Exhibit 2.
4) Was structural or non-structural fill used to create the “platform” that the pavilion will be situated on?

All fill used to create the level graded “platform” that the pavilion is situated on is nonstructural. The building, including all decks, stairs, and ramps, is supported on a driven pile foundation system that does not rely on the fill for support.

5) Does the following drawing accurately depict current as-built conditions at the project site? – Penfield Pavilion, Site Sections, Dwg #: SP400, 6/21/16, by DeStefano & Chamberlin – If not, please provide an updated drawing that depicts the as-built conditions.

Drawing SP400 dated 6/21/2016 accurately depicts the design which is currently being built. It is not an as-built drawing.

6) Will the stair and ramps be designed and constructed to allow for the free passage of flood waters and not create an obstruction flow? If so, please provide design details.

All stairs and ramps are constructed out of preservative treated wood framing, and supported on a driven pile foundation system. They are open underneath to allow the free passage of flood waters. The Town requested that all under building and under stair/ramp areas be enclosed with breakaway skirting to keep out mischievous youth. A breakaway skirting system consisting of recycled composite decking and preservative treated studs was engineered and detailed on the construction documents. It was engineered to breakaway under wave forces. Please refer to the attached detail sheets which show the stair and ramp construction, and the breakaway skirting. Additionally, there are two site stairs that are separate and distinct elements from the building and not part of the structure nor covered under the NFIP. These site stairs will be constructed out of precast concrete and will be open underneath to allow the free passage of flood waters. Please refer to the attached manufacturer’s shop drawings for the site stairs.
APPENDIX B
Appendix B

Issue II – Compliance with the Other Terms and Conditions of the Public Assistance Project Award

1) What is the final elevation going to be of the lowest structural member of the repaired pavilion?

   The bottom of the lowest structural member is designed to be elevation 13.08’ NAVD.

2) What is the minimum elevation that the Fairfield Zoning Regulations require for the lowest structural member of the pavilion?

   The building and site are in a VE Flood Zone with a Base Flood Elevation (BFE) of 13.0’ NAVD. The Design Flood Elevation (DFE) is equal to the BFE in accordance with the Town of Fairfield Planning and Zoning Regulations and the 2005 Connecticut State Building Code in effect at the time of the building permit application.

3) Do the Connecticut regulations for Floodplain Management for State Agencies apply to the subgrant under the Public Assistance grant awarded by the Grantee to the Applicant for the restoration of the pavilion? If no, then please provide a detailed explanation. If yes, what is the minimum elevation that these regulations require for the lowest structural member of the pavilion?

   No. Section 25-68(h)(1) does not apply because there is an agreement between CTDEEP and CTDEM/HS that suspends the requirements.
APPENDIX  C
Appendix C

Issue III – Environmental and Historic Preservation

1) Is the repaired pavilion going to be located entirely within the footprint of the original building? Please provide schematics, drawings, and/or pictures that show the before and after footprints, to include a drawing with the footprint of the restored pavilion superimposed on the pavilion’s original footprint.

See attached sheet A101 (exhibit C) “First Floor Plan” from the construction drawing set. The red dashed line is the footprint of the original building. Stairs, ramps, and decks necessary for emergency egress and building access had to be added onto the footprint of the original building in order to remain compliant with life safety provisions of the 2005 Connecticut State Building Code and the American with Disabilities Act (ADA) after the building was raised. The footprint of the original building, decks, stairs, and ramps was 29,385 square feet. The total amount of stair, ramp, and deck area which projects beyond the dashed line is shown on the plan as a red cross-hatched area, which totals 728 square feet. This is only 2.5% of the original building footprint, and was deemed insignificant by the Town’s NFIP enforcement officer.

2) Is the work to be performed only occurring on previously disturbed ground? This includes any movement of and staging of the West Wing.

All construction activity is confined to the previously disturbed areas of the project site. The construction site includes a paved parking lot, the existing pavilion (being repaired under this project), and beach sand which has been moved by both man and nature.

3) What is the total acreage of the project area, including all areas for staging.

The construction site occupies an area of approximately 128,000 sq. ft., or approximately 3 acres. The total lot area is approximately 238,000 square feet, or approximately 5.5 acres.

4) What is the source of fill that will be installed at the site? Please provide documentation that all fill was obtained from an authorized site and free from any contamination and archaeological resources.

The Town used two sources for the fill installed at Penfield Pavilion:
   Julian Development, LLC in Milford, CT;
   Haynes Materials, Oxford, CT.
The material used from Julian Development was tested by Fairfield Testing Laboratory and the testing report is attached as Exhibit 5.

The material used from Haynes Materials was tested by Coastal Materials Testing Lab and is attached as Exhibit 6.

The Town’s Earth Moving documents from the project specifications prepared by the design engineer are attached as Exhibit 4.

5) Did the Applicant obtain a consistency determination under the Connecticut Coastal Management Act from CCTDEEP for the current design before the Applicant commenced work? If so, please provide the relevant documentation from CTDEEP.

A consistency determination was requested prior to commencement of construction but not received until a short time after commencement of construction, as follows:

On or about June 9, 2015 the Fairfield Town Plan and Zoning Commission (“TPZ”) approved the Costal Site Plan report regarding the pavilion;

On February 24, 2016, after discussion with Kristal Kallenberg, CTDEEP-OLISP, James Wendt sent Ms. Kallenberg the entire plan set for the Pavilion;

On February 26, 2016, Mr. Wendt sent a letter to Ms. Kallenberg requesting comments on the plans.

On February 29, 2016, work on the project commenced;

On March 10, 2016 Ms. Kallenberg sent Mr. Wendt an email containing concerns and recommendations regarding the proposal. The primary recommendation was that a bulkhead previously installed by the town be removed and that a proposed revetment be eliminated from the plans;

On April 14, 2016 Brian Thompson, OLISP Director, again requested that the Town remove of the bulkhead and eliminate the revetment.

The bulkhead and portions of the revetment previously installed were subsequently removed by the Town. The revetment was removed from the plans. Copies of the pertinent correspondence are attached hereto as Exhibit 7.
EXHIBIT 1
September 30, 2016

Dana Conover  
Public Assistance Coordinator  
Connecticut Department of Emergency Services & Public Protection  
25 Sigourney Street  
Hartford, CT 06106-5042

Joseph Michelangelo  
Director of Public Works  
725 Old Post Road  
Fairfield, CT 06824

Re:  

Dear Messrs. Conover and Michelangelo:

This letter responds to the Connecticut Department of Emergency Services and Public Protection’s ("Grantee") request to change the scope of work for Project Worksheet #680 under the Public Assistance grant for the major disaster declaration identified as FEMA-4087-DR. The applicant for this project is the Town of Fairfield ("Applicant") and the project involves the restoration of the Penfield Pavilion as a result of damage caused by Hurricane Sandy. Upon review of the scope change request, there are concerns: (1) whether the requested scope comports with the minimum floodplain management requirements of the National Flood Insurance Program ("NFIP") and 44 C.F.R. § 9.11(d); (2) that the Applicant has violated the material terms and conditions of the award by commencing the revised scope before notifying and obtaining approval from the Grantee and FEMA; and (3) whether the revised scope of work falls within the scope of a categorical exclusion under the National Environmental Policy Act and comports with other environmental and historic preservation laws. Because of these concerns, FEMA is providing the Grantee and Applicant with 30 days from the date of this letter to provide additional information before FEMA moves forward to make a final determination. This is a request for information.

I. BACKGROUND

A. Scope of Work for Project Worksheet 680 and the Relevant Terms and Conditions of the Award

The Penfield Pavilion, owned and operated by the Applicant, was a 16,756 square foot single story, wood/steel frame structure that consisted of east and central/west wings.
Hurricane Sandy damaged the Penfield Pavilion from October 29 to November 9, 2012, and the Applicant applied through the Grantee under the Public Assistance grant for major disaster declaration FEMA-4087-DR for financial assistance to restore this damage. Upon receiving the request, FEMA prepared Project Worksheet #680 to set forth the disaster damage, scope of work to restore that damage, and estimated cost for that work. FEMA, during project formulation, prepared a Cost Estimating Format ("CEF") and calculated an estimated repair cost of $2,090,442.85 and an estimated replacement cost of $3,833,932.60 in Part A of the CEF. Because the repair cost exceeded 50% of the replacement cost, FEMA concluded that the facility was eligible for replacement. As such, the final scope of work for the project was the full replacement of the Penfield Pavilion and FEMA approved Project Worksheet #680 on December 17, 2015, with total estimated costs of $4,340,054.11.¹ There was nothing in the scope of work for the project concerning the regrading and placement of fill in the parking lot next to the pavilion.

Project Worksheet #680 stated, in relevant part, that the Applicant must, upon completion, return the facility to “its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards.”² There are two such codes and standards currently at issue that are later discussed in this letter. The first is the requirement for the Applicant to comply with Section 32 of the Fairfield Zoning Regulations, which incorporate the requirements of 44 C.F.R. § 60.3. The second is the regulation at 44 C.F.R. § 9.11(d)(6), which provides that “no action may be taken if it is inconsistent with the criteria of the National Flood Insurance Program (49 CFR part 59 et seq.) or any more restrictive Federal, State, or local floodplain management standards.”³

Project Worksheet #680 also stated that the “current scope of work is...replacement” and that “the existing building will be razed and properly disposed of. The site will [be] groomed and prepped for the construction of a new pavilion built to the specs provided by original Wiles Architect...The new pavilion will be built in the existing footprint on previously disturbed ground and elevated per Codes and Standard Compliance.” The scope of work also provided that the foundation system of the new pavilion will be raised so that the new finished floor elevation “would be 15.5 +/- minimum based on a BFE of 13...” As it related to scope changes, the Project Worksheet unambiguously mandated that if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.” The Applicant, in completing the project, was also required to “comply with all applicable

¹ The total estimated cost to replace the facility was $6,583,222 and, following reductions of $2,250,000 for actual insurance proceeds and the mandatory insurance reduction under Section 406 of the Stafford Act, resulting in total estimated, eligible cost of $4,340,054.11.
² PA-01-CT-4087-PW-00680, p. 5.
³ FEMA’s regulations at 44 C.F.R. pt. 9 set forth the policy, procedure and responsibilities to implement and enforce Executive Order 11988, Floodplain Management and Executive 11990, Protection of Wetlands.
laws and regulations...", a requirement set forth in the FEMA-State Agreement between FEMA and Connecticut that flows down to the Applicant.\textsuperscript{4}

\textbf{B. Scope Change Request and Request for Technical Assistance}

The Grantee transmitted a scope change request to the Regional Office for Project Worksheet \#680 on behalf of the Applicant in a letter dated April 29, 2016. During a phone call with FEMA on May 12, 2016, the Grantee informed FEMA that there would be changes and additions to the scope change and asked for FEMA to put the scope change request on hold until it provided additional information. The Grantee then provided a revised scope change request on June 30, 2016, that superseded the request dated April 29, 2016.\textsuperscript{5} The following provides a summary of the requested changes:

- **West Wing** – The Applicant stated that the finished portion of the West Wing (referred to as the central/west wing in Project Worksheet \#680) will remain intact and re-utilized. The building will be shored on temporary steel beams and cribbing towers and rolled on the parking lot for storage. The old foundations will be picked out of the ground, timber piles will be driven to the required capacity to support building loads and embedment to reduce scour, and concrete grade beams will be poured to cap the piles and transfer loads to them from the structure. The structure will then be rolled back into its old position on top of the new steel columns and beams. Utilities will be reconnected and all necessary repairs to electrical, HVAC, fire protection, and alarm systems will be performed.

- **Locker Wing** – The Applicant stated that it would demolish and reconstruct the unfinished Locker Wing (referred to as the east wing in Project Worksheet 680) rather than moving the structure twice and elevating it. Timber piles will be driven to the required capacity to support building loads and to the embedment to reduce scour. The two wings will be separated by a new continuous covered breezeway.

- **Exterior Wooden Deck** – The exterior wooden deck will be demolished and a new wooden pile system will be installed and wood deck constructed. Because the transition between the elevation of the deck and the beach will be greater due to the increased height of the building (which will now have its lowest structural member at 13 feet), the Applicant will install a patio at an elevation of 12 feet midway between the elevation of the building and the beach.

- **Parking Lot** – The parking lot will be re-graded by placing low cost road

\textsuperscript{4} FEMA-State Agreement, Exhibit C, Article III (executed on Oct. 31, 2012).
\textsuperscript{5} Letter from Dana Conover, Public Assistance Coordinator, State of Connecticut, to Paul F. Ford, Acting Regional Administrator, FEMA Region I, \textit{re: Revision to Change in Scope of Work request: The Town of Fairfield DR-4087-CT pW-680 (Penfield Pavilion)} (June 30, 2016).
millings to steepen the pitch slightly. This will raise the high point of the lot along the front of the building and reduce the extent of stairs and ramps required from the parking lot level. A new intermediate grade plane will be established under and around the building by placing fill up to elevation 11 feet (under) and 12 feet (around). The footprint of the parking lot and number of spaces are being maintained.

The Grantee provided a letter from the NFIP/CRS Coordinator from the Town of Fairfield that confirmed that the requested, revised scope complies with the requirements of the NFIP and meets the guidance provided in FEMA Technical Bulletin #5. In that letter, the NFIP/CRS Coordinator stated that the “lowest horizontal structural member will be at or above the base flood elevation with the required open pier foundation to allow the passage of flood waters” and there is a “breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction.” This proposed scope was subject to a public hearing and “was approved by the Town Plan and Zoning Commission on June 9, 2015.”

Separate from the scope change request process, the Grantee and the Connecticut Department of Energy & Environmental Preservation (“CTDEEP”) transmitted a joint letter to the Regional Office concerning Project Worksheet 680 on June 1, 2016. In the letter, the Grantee and CTDEEP explained that the Applicant decided to repair the Penfield Pavilion instead of replacing it, commencing construction on February 29, 2016, without an official change to the original scope of work for the project. They also expressed concern that the revised scope of work may not comply with the minimum requirements of the NFIP, although the Applicant asserts that the building construction plans are compliant with NFIP requirements. Because of the disagreement, the Grantee and CTDEEP requested that FEMA review the design plans for NFIP compliance “in order that the PA SOW be re-written accurately so that there are no reimbursement issues upon project completion.” They stated that the goal of this review is “assure all parties of the compliance with the NFIP regulations and to avoid any potential eligibility and reimbursement concerns upon completion of the PA project.” The letter included the current design plans for the Penfield Pavilion.

FEMA responded to the Grantee’s and CTDEEP’s request for technical assistance in a letter dated August 9, 2016. In the letter, FEMA explained that there were concerns

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6 Letter from James R. Wendt, AICP, Assistant Planning Director, NFIP/CRS Coordinator, Town of Fairfield, to Dana Conover, Public Assistance Coordinator, Connecticut Division of Emergency Management and Homeland Security re: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT (June 28, 2016).
7 Letter to Richard Nicklas, Floodplain Management and Insurance Branch Chief, FEMA Region I from Dana Conover, Public Assistance Coordinator, CTDESP/DEMHS and Diane Iloivic, State NFIP Coordinator, CTDEEP re: NFIP Technical Review Request – Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, Connecticut (June 1, 2016).
8 Letter from Robert Grimley, Disaster Recovery Manager, FEMA Region I and Richard Nicklas, Branch Chief, Floodplain Management and Insurance, FEMA Region I to Diane Iloovic, National Flood
that the scope of work being pursued by the Applicant may not comply with the Fairfield Zoning Regulations and 44 C.F.R. § 9.11(d)(6), which incorporate the requirements of the NFIP. The letter also explained that the Applicant may have violated the terms and conditions of the project award by commencing a different scope of work (repair) without obtaining prior approval from FEMA and not bringing the lowest floor of the building to an elevation of 15.5 feet. Lastly, the letter explained that it was unclear whether the current design for the pavilion for which construction had already begun fell within the scope of FEMA’s environmental and historic preservation review. In light of these issues, the letter stated that FEMA was placing a financial hold on the project and would issue a request for information to obtain more information before making any final determinations.

II. DISCUSSION

A. Issue 1 – Compliance with the Applicant’s Zoning Regulations and 44 C.F.R. pt. 9

The Applicant is a participating community in the NFIP and has adopted Zoning Regulations that meet the minimum requirements of 44 C.F.R. pt. 60.9 The NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, repair of substantially damaged buildings, and substantial improvement of existing buildings in special flood hazard areas. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the Flood Insurance Rate Map (“FIRM”), and identified the coastal high hazard areas on the FIRM. As it relates to the Town of Fairfield, FEMA has issued a FIRM and Flood Insurance Study (“FIS”) with the data triggering the requirement for the Applicant to meet, among other things, the regulation at 44 C.F.R. § 60.3(e). There are three requirements under 44 C.F.R. § 60.3(e) that are particularly relevant to the Applicant’s project to restore the Penfield Pavilion.

First, the regulation at 44 C.F.R. § 60.3(e)(5) provides that all new and substantially improved structures within the VE Zone must have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion

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of the building or supporting foundation system. The regulation at 44 C.F.R. § 59.1 defines “substantial improvement” as “any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the ‘start of construction’ of the improvement. . . .”

Second, the regulation at 44 C.F.R. § 60.3(c)(4) requires that all new construction and substantial improvements in V, VI-30, and VE zones must be elevated to or above the base flood elevation (“BFE”) on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings and columns) is elevated to or above the base flood level. Technical Bulletin 5 clarifies that grade beams used to tie together foundation piles or columns to provide additional lateral support are not considered obstructions if placed with their upper surfaces flush with or below the natural grade.10

Third, the regulation at 44 C.F.R. § 60.3(c)(6) prohibits the “use of fill for structural support of buildings within Zones...VE...on the community’s FIRM.” It is the case that, as described in Technical Bulletin 5, the placement of “minor quantities” of nonstructural fill in a VE Zone may be used for landscaping, drainage under and around buildings, and support of parking slabs, pool decks, patios, walkways, and similar site elements.11 Such nonstructural fill must not prevent the free passage of floodwaters and waves beneath elevated buildings.12 Technical Bulletin 5 says that it is generally the case that the addition of 1 to 2 feet of site-compatible, nonstructural fill in a V zone would not lead to adverse effects on buildings, but that amounts over 2 feet should involve the comparison of the proposed final grade to local topography.

The current FIRM establishes that the Penfield Pavilion is in the VE Zone.13 The Fairfield Zoning Regulations, in turn, require that buildings and structures in flood prone areas as delineated on a FIRM “shall conform” to the standards set forth in Section 32 (entitled “Flood Protection”) and incorporate the requirements of 44 C.F.R. § 60.3(c)(4), (5), and (6) at Section 32.5.e and d of the Fairfield Zoning Regulations. Furthermore, the requirements of 44 C.F.R. § 60.3 apply not only as a local standard pursuant to the Fairfield Zoning Regulations, but 44 C.F.R. § 9.11(d) also requires that all Public Assistance projects adhere to that regulation. The regulation at 44 C.F.R. § 9.11(d) provides that FEMA will not provide financial assistance for any activity if it is “inconsistent with the criteria of the National Flood Insurance Program (44 CFR part 59 et seq.) or any more restrictive Federal, State or local floodplain management standards.” The regulation also provides that new construction and substantial improvement of

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11 Id. at 21-22.
12 Id. at 11.
13 Flood Insurance Rate Map Panel No. 09001C0438G (effective date of July 8, 2013).
structures “shall be elevated on open works (walls, columns, piers, piles, etc.) rather than on fill, in all cases in coastal high hazard areas…”

The Grantee and Applicant have not provided sufficient information for FEMA to determine whether the Applicant’s proposed design complies with the minimum requirements of 44 C.F.R. § 60.3(e)(4)-(6) and, by necessary implication, the Fairfield Zoning Regulations and 44 C.F.R. § 9.11(d). Because of the lack of necessary information, FEMA requests that the Applicant and Grantee provide responses to the following questions in order to enable FEMA to make a final determination.

(1) Has the Applicant made a substantial damage or substantial improvement determination for the pavilion? If so, please provide that written determination.

(2) What was considered to be the natural grade elevation of the site for the repair and reconstruction of the pavilion? Please include elevation datum.

(3) What was the basis/source for determining the natural grade elevation of the site? Please provide data used for this determination.

(4) Was structural or non-structural fill used to create the “platform” that the pavilion will be situated on?

(5) Does the following drawing accurately depict current as-built conditions at the project site?

Penfield Pavilion, Site Sections, Dwg #: SP400, 6/21/2016, by DeStefano & Chamberlain

If not, please provide an updated drawing that depicts the as-built conditions.

(6) Will the stairs and ramps be designed and constructed to allow for the free passage of flood waters and not create an obstruction to flow? If so, please provide design details.

B. Issue 2 – Compliance with the Other Terms and Conditions of the Public Assistance Project Award

FEMA’s former regulations at 44 C.F.R. pt. 13 set forth uniform administrative rules for grants and subgrants to state and local governments and FEMA made compliance with these regulations a condition of the Public Assistance grant.14 The

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14 FEMA-State Agreement, Exhibit B (General Conditions), ¶ 3 (“The State agrees to comply with the requirements of laws and regulations found in the Stafford Act and 44 CFR.”); Exhibit C, Article III (“The Grantee agrees to comply with all applicable laws and regulations, including but not limited to the following laws, regulations, and OMB circulars that govern standard grant management practices and are
Grantee agreed to these requirements as part of the FEMA-State Agreement for FEMA-4087-DR and through accepting the Public Assistance project award and these requirements “passed through” to the Applicant. Under 44 C.F.R. § 13.30(d)(1), a grantee and subgrantee must obtain the prior approval of FEMA before any revision of the scope or objectives of a Public Assistance construction project 15 and the Public Assistance Guide further reinforced the requirement for FEMA prior approval for changes in scope of work. 16 In addition to the regulatory and policy requirements, FEMA made clear in Project Worksheet #680 that the “current scope of work is...replacement” and that, if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.” Failure to follow this requirement is a material violation of the terms and conditions of the Public Assistance grant and FEMA may, in such circumstances, take any number of enforcement remedies, including award termination. 17

The information provided to FEMA makes clear that the Applicant will not be conducting a replacement of the pavilion, but rather repair, and also confirms that the Applicant has already commenced work on the revised scope and never requested permission from FEMA through the Grantee before commencing that work. The Applicant, therefore, has committed a material violation of a term and condition of the Public Assistance award. As such, the Applicant and Grantee should provide any information that it feels appropriate in explaining why the Applicant committed the violation to be considered by FEMA’s in making its enforcement decision.

Project Worksheet #680 also provided that the foundation system of the new pavilion would be raised so that the new finished floor elevation “would be 15.5 +/- minimum based on a BFE of 13....” In setting this design standard, the Project Worksheet indicates that this 15.5 foot elevation was a result of “conversations and recommendations from the Town consultants” of a “freeboard of 2 feet” and that the Fairfield Zoning Regulations have no such freeboard requirement. Because there is no federal standard that would require an elevation beyond the BFE for the location, it would appear that, based on the information in the administrative record, the increased elevation may have been at the request of the Applicant and not required by any applicable code or standard. Therefore, the Applicant and Grantee should provide

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15 44 C.F.R. § 13.30(d)(1) (2012) (“(d) Programmatic Changes. Grantees and subgrantee must obtain the prior approval of the awarding agency whenever any of the following actions is anticipated: (1) Any revision to the scope or objectives of the project...”).


responses to the following questions in order to guide FEMA’s decision as to the unapproved revision to the scope of work:

(1) What is the final elevation going to be of the lowest structural member of the repaired pavilion?

(2) What is the minimum elevation that the Fairfield Zoning Regulations require for the lowest structural member of the pavilion?

(3) Do the Connecticut regulations for Floodplain Management for State Agencies apply to the subgrant under the Public Assistance grant awarded by the Grantee to the Applicant for the restoration of the pavilion? If no, then please provide a detailed explanation. If yes, what is the minimum elevation that these regulations require for the lowest structural member of the pavilion?

C. Issue 3 – Environmental and Historic Preservation

FEMA must consider and comply with a range of federal laws, regulations, and executive orders concerning environmental protection and historic preservation when providing financial assistance under the Public Assistance grant and the size and type of the project and project site and conditions generally determine the level of review that must be performed. There are three such statutes potentially implicated by the Applicant’s commencement of the unapproved change in the scope of the work to repair the pavilion.

National Environmental Policy Act. The National Environmental Policy Act (“NEPA”) requires every federal agency to follow a specific planning process to ensure that an agency has considered and the general public is fully informed about the consequences of a proposed federal action, such as the approval of permanent work project under the Public Assistance grant for a major disaster. This review and consultation process is used to evaluate the impact of a project and any possible alternatives may have on the environment, and FEMA must complete this process before it approves a project.

FEMA’s regulations regarding NEPA were set forth at 44 C.F.R. pt. 10 at the time it awarded Project Worksheet #680. However, since the time of award, FEMA has rescinded 44 C.F.R. pt. 10 and the applicable NEPA implementing procedures are set forth in DHS Directive No. 023-1, rev. 1, Implementation of the National Environmental Policy Act (Oct. 31, 2014); DHS Instruction No. 023-01-001-01, rev. 1, Implementation

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18 See Regulations, Conn. State Agencies, §§ 25-68h-1 to 3.
19 See Regulations, Conn. State Agencies §§ 25-68h-1(c)(1) (“...Any agency providing grants...for an activity shall also demonstrate its ability to guarantee that all requirements of Section 25-68d of the General Statutes and Section 25-68h-1 through 25-68h-3, inclusive, of these regulations will be complied with by the person or persons receiving the grant...”) (emphasis added).
The NEPA does not require that FEMA limit the impacts of a project on the environment nor require FEMA to only fund the alternative that has the least environmental impact—it does, however, require that FEMA makes the decision to fund a project in an informed manner. There are four potential outcomes or levels of NEPA review, which are statutory exclusion,\(^{22}\) categorical exclusion, environmental assessment, and environmental impact statement. A statutory exclusion means that no NEPA review is required; for the other three categories, the degree of potential environmental impact determines the level of review and documentation required.

Occasionally FEMA funding is requested for an action that has been initiated and/or completed before environmental review and documentation as required by NEPA and DHS and FEMA NEPA implementing guidance. This situation also arises where FEMA does complete its NEPA review for a project but then, following award, an applicant revises its scope of work without seeking FEMA review and approval. In these circumstances, FEMA will conclude that the project complies with NEPA requirements if it qualifies for a statutory exclusion or qualifies for a categorical exclusion in DHS Instruction No. 023-01, Appendix A and is found free of extraordinary circumstances that require consultation under other environmental and historic preservation laws and regulations. If it does not, then FEMA will not provide any funding for the project.

FEMA originally determined that the replacement of pavilion on its existing footprint was “categorically excluded” from the need to prepare an Environmental Impact Statement or Environmental Assessment pursuant to 44 C.F.R. § 10.8(d)(2)(xv) (2015).\(^{23}\) This regulation provided a categorical exclusion from NEPA for “Repair, reconstruction, restoration, elevation, retrofitting, upgrading to current codes and standards, or replacement of any facility in a manner that substantially conforms to the pre-existing design, function, and location.” This categorical exclusion, however, no longer exists, and FEMA must evaluate the revised scope of the Applicant to determine whether it falls

\(^{23}\) As detailed in the previous paragraph, FEMA’s implementing regulations for the NEPA at 44 C.F.R. pt. 10 have since been rescinded and replaced with DHS and FEMA implementing guidance.
within the scope of the categorical exclusions under the DHS and FEMA NEPA implementing guidance.24

National Historic Preservation Act. Section 106 of the National Historic Preservation Act ("NHPA") requires FEMA to consider the effects of its activities (known as "undertakings") on any historic property and to afford the Advisory Council on Historic Preservation ("ACHP") an opportunity to comment on such projects before the expenditure of any federal funds.25 A Public Assistance project is an "undertaking" for the purposes of the NHPA, and a historic property is any property that is included in, or eligible for inclusion in, the National Register of Historic Places ("NRHP"). NRHP-listed or -eligible properties fall into five broad categories: buildings, structures, sites, objects, and districts.

During the required NHPA review process for a Public Assistance project, FEMA will identify the area of potential effect, which is the geographic area(s) within which a project may directly or indirectly effect historic properties. If there are historic properties, then FEMA, in consultation with the consulting parties (the Grantee, Applicant, State Historic Preservation Officer ("SHPO")/Tribal Historic Preservation Officer ("THPO"), and others as appropriate) and the public to assess whether the project will adversely affect historic properties. An adverse effect occurs when a project may directly or indirectly diminish the integrity of an historic property by altering any of the characteristics that qualify that property for inclusion on the NRHP. If the project will not adversely affect historic properties, then FEMA refrains from further NHPA review. Alternatively, if there will be adverse effects to historic properties, then FEMA will explore ways to avoid or mitigate adverse effects to historic properties in consultation with the consulting parties and the public.

FEMA determined that the pavilion was not "not of exceptional merit and does not meet the minimum 50 year age requirement for inclusion on the National Register." Based on this determination that the pavilion is not eligible for listing on the NRHP and that all work would be performed on already disturbed ground, FEMA determined when reviewing the original scope of work for replacement that it did not need to conduct any additional consultation with the SHPO pursuant to the Programmatic Agreement between FEMA and the State.

Coastal Zone Management Act. FEMA’s requirements under the Coastal Zone Management Act ("CZMA") when providing financial assistance under a Public

24 A "categorical exclusion" is a category of actions which do not individually or cumulatively have a significant effect on the human environment and for which neither an environmental assessment nor an environmental impact statement is required. 40 C.F.R. § 1508.4.
Assistance Grant are laid out in Section 307(d) of the CZMA and Subpart F of 15 C.F.R. pt. 930. The law and regulations place the responsibility on a local government applicant to submit for consistency review the proposed project receiving assistance to the cognizant state agencies. If the cognizant state agency objects to the local government’s application, then the federal agency is prohibited from providing financial assistance except under narrow circumstances. The Record of Environmental Consideration (“REC”) for Project Worksheet 680 provided that the Applicant is responsible for “coordinating and obtaining any permits from the [CTDEEP] prior to initiating work.”

Request for Information. It is unclear from the information provided whether the current repair scope of work that the Applicant has already commenced qualifies for a categorical exclusion in DHS Instruction No. 023-01, Appendix A. It is also unclear whether the Applicant obtained the required consistency determination from the CTDEEP pursuant to as required by the CZMA. The Grantee and Applicant, therefore, should provide responses to the following questions:

1. Is the repaired pavilion going to be located entirely within the footprint of the original building? Please provide schematics, drawings, and/or pictures that show the before and after footprints, to include a drawing with the footprint of the restored pavilion superimposed on the pavilion’s original footprint.

2. Is the work to be performed only occurring on previously disturbed ground? This includes any movement of and staging of the West Wing.

3. What is the total acreage of the project area, including all areas for staging?

4. What is the source of fill that will be installed at the site? Please provide documentation that all fill was obtained from an authorized site and free from any contamination and archaeological resources.

5. Did the Applicant obtain a consistency determination under the Connecticut Coastal Management Act from CTDEEP for the current design before the Applicant commenced work? If so, please provide the relevant documentation from CTDEEP.

III. CONCLUSION

FEMA is providing the Grantee and Applicant with 30 days from the date of this letter to provide responses to the questions presented and associated requests for documentation. After receiving the information or at the expiration of the 30 days,

27 15 C.F.R. §§ 930.94 and 97.
whichever occurs first, FEMA will move forward to make a final determination. If you have any questions in regard to this request for information, please feel free to contact me at George.Vanderschmidt@FEMA.DHS.gov.

Sincerely,

GEORGE F VANDERSCHMIDT

G. Fred Vanderschmidt
Disaster Recovery Manager
FEMA-4087-DR

GFV/ks/rss
EXHIBIT 2
October 25, 2016

Mr. Joseph Michelangelo, P.E.
Director of Public Works
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

Re: Restoration of Penfield Pavilion - 323 Fairfield Beach Road, Fairfield, CT
FEMA-4087-DR-Town of Fairfield-PA-ID 001-26620-00 / PW 680

Dear Mr. Michelangelo,

As requested, please accept the following responses to RFI questions put forth by Mr. George F. Vanderschmidt, Disaster Recovery Manager, who works out of FEMA’s Region 1 office in Boston:

**Question A2 and A3:** The natural grade of the site is the dune topography that once existed between Long Island Sound and Fairfield Beach Road before the site was first built on in the early 1900s, then disturbed by demolition and new construction in the 2000s, and finally scoured by Hurricanes Irene and Sandy in 2011 and 2012. We used site transects taken to the east and west of the subject building to reestablish the natural topography under and around the building. The dune crest elevation varies from el. 10.0’ to 12.0’ NAVD across the Town-owned property, which stretches from Rickard’s Beach to the Durrell Pavilion. The building straddles the dune. The average grade around the perimeter of the building is 11.0’ NAVD, and under the building it is 10.8’ NAVD. Under the West Wing of the building, concrete grade beams were used, driven by the logistics of moving the building onto the new foundation. The top of grade beams are set at elevation 10.7’ NAVD, which is at or below the re-established natural grade. At no point is any grade beam above grade.

**Question A4:** All fill used to create the level graded “platform” that the pavilion is situated on is non-structural. The building, including all decks, stairs, and ramps, is supported on a driven pile foundation system that does not rely on the fill for support.

**Question A5:** Drawing SP400 dated 6/21/2016 accurately depicts the design which is currently being built. It is not an as-built drawing.
**Question A6:** All stairs and ramps are constructed out of preservative treated wood framing, and supported on a driven pile foundation system. They are open underneath to allow the free passage of flood waters. The Town requested that all under building and under stair/ramp areas be enclosed with breakaway skirting to keep out mischievous youth. A breakaway skirting system consisting of recycled composite decking and preservative treated studs was engineered and detailed on the construction documents. It was engineered to breakaway under wave forces. Please refer to the attached detail sheets which show the stair and ramp construction, and the breakaway skirting. Additionally, there are two site stairs which are separate and distinct elements from the building and not part of the structure nor covered under the NFIP. These site stairs will be constructed out of precast concrete and will be open underneath to allow the free passage of flood waters. Please refer to the attached manufacturer’s shop drawings for the site stairs.

**Question B1 and B2:** Bottom of the lowest structural member is designed to be elevation 13.08’ NAVD. An Elevation Certificate will be completed by a licensed land surveyor. The building and site are in a VE Flood Zone with a Base Flood Elevation (BFE) of 13.0’ NAVD. The Design Flood Elevation (DFE) is equal to the BFE in accordance with the Town of Fairfield Planning and Zoning Regulations and the 2005 Connecticut State Building Code in effect at the time of building permit application.

**Question C1:** See attached sheet A101 “First Floor Plan” from the construction drawing set. The red dashed line is the footprint of the original building. Stairs, ramps, and decks necessary for emergency egress and building access had to be added onto the footprint of the original building in order to remain compliant with life safety provisions of the 2005 Connecticut State Building Code and the American with Disabilities Act (ADA) after the building was raised. The footprint of the original building, decks, stairs, and ramps was 29,385 square feet. The total amount of stair, ramp, and deck area which projects beyond the dashed line is shown on the plan as a red cross-hatched area, which totals 728 square feet. This is only 2.5% of the original building footprint, and was deemed insignificant by the Town’s NFIP enforcement officer.

**Question C2:** All construction activity is confined to the previously disturbed areas of the project site. The construction site includes a paved parking lot, the existing pavilion (being repaired under this project), and beach sand which has been moved by both man and nature.

**Question C3:** The construction site occupies an area of approximately 128,000 sq. ft., or approximately 3 acres. The total lot area is approximately 238,000 square feet, or approximately 5.5 acres.

In my opinion as a professional engineer with extensive experience in the design of building structures and foundations in coastal high hazard areas, along Fairfield Beach in particular, this project conforms to the NFIP, Town of Fairfield Zoning Regulations, the State of Connecticut Building Code, and referenced standard ASCE 24 “Flood Resistant Design and Construction”.

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*DeStefano & Chamberlain Incorporated*

Structural and Architectural Engineering
I hope the forgoing answers are sufficient, however, if any additional information is required, please contact me at your earliest convenience.

Sincerely,

Kevin H. Chamberlain, P.E., SECB

cc:  Honorable Michael C. Tetreau, First Selectman, Town of Fairfield
     Mr. Dana Conover, Public Assistance Coordinator, CT DEMHS
     Mr. James P. Bradley, Chair, Penfield Building Committee
     Mr. James R. Wendt, AICP, Assistant Planning Director, Town of Fairfield
     Mr. Stanton H. Lesser, Esq., Town Attorney, Town of Fairfield
     Mr. Emmet C. Hibson, Jr., Esq., Human Resources Director, Town of Fairfield
     Mr. Bruce B. Smith, Public Assistance Coordinator, Witt O’Briens
A401

SECTION

5/4x6 decking
PT 5/4x6
PT 2x4
PT 6x6 post
PT 2x4 cleat
#4 at 48"o.c.
PT 4x4 post
PT 2x12 stringers
PT 5/4x6
PT 2x12 stringers
PT 2x12 rimboard
PT 2x10 jsts
PT 2x10 rimboard beyond
4x4 cedar railing post
4x4 cedar railing post
4x4 cedar post

Hand rail
Galv. steel 1 1/2"ø
Galv. steel 1 1/2"ø
Grab bar
Grab bar
1/8"ø cable
1/8"ø cable

All new construction and substantial improvement shall:

1. Be lifted to or above the lowest flood level to prevent flotation, collapse, or lateral movement of the loads, including the effects of buoyancy.

2. Be constructed by material resistant to flood damage.

3. Be constructed by methods and practices that minimize flood damage.

4. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the components during conditions of flooding.

5. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

6. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

7. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

8. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

9. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

10. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

11. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

12. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

13. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

14. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

15. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

16. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

17. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

18. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

19. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

20. Have the lowest floor, including basement, elevated to or above the highest water level to prevent water from entering or accumulating within the system.

Ownership and conditions of use:

PENFIELD PAVILION
323 Fairfield Beach Road
Norwalk CT

F G H J K
E

Date Description
4/30/2015 50% Construction Documents

M N P

SECTION

5

3/4" = 1'-0"A401

SECTION

6

3/4" = 1'-0"A401

SECTION

7

3/4" = 1'-0"A401

SECTION

8

3/4" = 1'-0"A401
General Notes:
5000 psi Strength Concrete in 28 days

Rebar Detail

(3) #4 T& B

#4 @18" o.c. T & B

Right Side View

24" 36"

Top View

Lifting Insert

12' 0"

Iso View

ATLAS CONCRETE PRODUCTS
www.AtlasConcrete.com
65 Burritt St.
New Britain CT 06053
800-774-1112
860-224-2244
860-224-2255 Fax
4-3/4" Lifting Inserts
How will these be patched after stair is set?

3" Aluminum Noising Amstep Products
Item # 231 A or equal

Broom finish on tread surfaces

Tool all exposed edges to 1" radius or insert 3/4"x3/4" chamfer strips into forms

General Notes:
5000 psi Strength Concrete in 28 days

#3 Rebar at Nose

#4 at 12" o.c E.W.

2" clear

#5x6"

#4 3" Dowels at 12" o.c. to be Field Grouted into footing into 3/4" holes in stair

Note shape of rebar cage

Provide (6)-4" x 6" deep sleeves for grouting of railing posts as shown

1" backcut

12" Typ.

6" Typ.

12" Typ.

65 Burritt St.
New Britain CT 06053
800-774-1112
860-224-2244
860-224-2255 Fax

Custom Banking Step
Step Detail Rev.1
5200 Lbs
EXHIBIT 3
Mr. Dana Conover
Public Assistance Coordinator
CT Division of Emergency Management
and Homeland Security
25 Sigourney Street, 6th Floor
Hartford, CT 06106

June 28, 2016

RE: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT

Dear Mr. Conover:

This letter will confirm that the above captioned pavilion is being constructed in accordance with the requirements of the National Flood Insurance Program. The lowest horizontal structural member will be at or above the base flood elevation with the required open pier foundation to allow the passage of flood waters. There is a breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction.

We concur with the site engineer's opinion that the design of the building and the site grading is in compliance with the NFIP requirements and squarely meets the guidance provided in FEMA Technical Bulletin #5. This proposal was subject to a public hearing and was approved by the Town Plan and Zoning Commission on June 9, 2015.

Please let me know if you require any additional information.

Very truly yours

James R. Wendt, AICP
Assistant Planning Director,
NFIP/CRS Coordinator
EXHIBIT 4
SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for asphalt walks and ramps (not including parking lot)
3. Preparing subgrades for landscape areas.
4. Excavating and backfilling for buildings and structures.
5. Drainage course for transformer pad.
6. Subbase course for asphalt walks and ramps (not including parking lot).
7. Subsurface drainage backfill for walls and trenches.
8. Excavating and backfilling trenches for utilities and pits for buried utility structures.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation for recording preexcavation and earth-moving progress.
2. Section 012200 “Unit Prices” and Section 012300 “Alternates” for unit price and alternates affecting earth moving work.
3. Section 011000 “Summary” for work to be performed by Owner.
4. Section 329200 "Grass" for finish grading in grass areas, including preparing and placing planting soil for turf areas.
5. Section 329300 "Planting" for finish grading in planting areas and tree and shrub pit excavation and planting.
6. Section 321443 “Porous Unit Paving” for installation of salvaged porous pavers under Alternate No. 9.
7. Section 316219 “Driven Piles” for timber piles.
8. Section 323223 “Segmental Retaining Walls” for new retaining walls.
9. Section 321216 "Asphalt Paving" for parking lot pavement, sidewalks, and curbs.
10. Section 312100 “Storm Drainage” for storm drainage system underneath and adjacent to the existing building, connected to existing overflow pipe.
11. Section 334600 “Sub Drainage” for retaining wall foundation drain and bio swale underdrain.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
Penfield Pavilion
Fairfield, CT

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

D. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
   2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
   3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

F. Fill: Soil materials used to raise existing grades.

G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

H. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and hot-mix asphalt walk.

I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

J. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct preexcavation conference at Project site.
   1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
      a. Personnel and equipment needed to make progress and avoid delays.
      b. Coordination of Work with utility locator service.
      c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
d.  Extent of trenching by hand or with air spade.
e.  Field quality control.

1.5  ACTION SUBMITTALS

A.  Product Data: For each type of the following manufactured products required:
   1.  Geotextiles.
   2.  Warning tapes.

B.  Samples for Verification: For the following products, in sizes indicated below:
   2.  Warning Tape: 12 inches long; of each color.

1.6  INFORMATIONAL SUBMITTALS

A.  Material Test Reports: For each borrow soil material proposed for fill and backfill as follows:
   1.  Classification according to ASTM D 2487.
   2.  Laboratory compaction curve according to ASTM D 1557.
   3.  Description of source location of material.

B.  Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.7  QUALITY ASSURANCE

A.  Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.8  FIELD CONDITIONS

A.  Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
   1.  Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2.  Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
   3.  Engage private-duty traffic control officer for any work which encroaches into the right of way, if required by the Fairfield Police Department.

B.  Utility Locator Service: Notify “Call Before You Dig” and wait for utility locations to be completely marked before beginning earth-moving operations.
Penfield Pavilion
Fairfield, CT

C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" and shown on the Drawings are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

F. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

G. Drainage Course: Uniformly graded crushed stone, ¾ inch size unless noted otherwise.

H. Filter Material: Uniformly graded crushed stone, ¾ inch size unless noted otherwise.

I. Sand: ASTM C 33/C 33M; fine aggregate.

J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
   1. Survivability: Class 2; AASHTO M 288.
2. Survivability: As follows:
   a. Grab Tensile Strength: 157 lbf; ASTM D 4632.
   b. Sewn Seam Strength: 142 lbf; ASTM D 4632.
   c. Tear Strength: 56 lbf; ASTM D 4533.
   d. Puncture Strength: 56 lbf; ASTM D 4833.

3. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
4. Permittivity: 0.2 per second, minimum; ASTM D 4491.
5. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

   1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of grade beams before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete grade beams.

3. Excavation for Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths as indicated on the Drawings.

C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
3.7 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.8 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including subdrainage.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.11 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.
Penfield Pavilion  
Fairfield, CT

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Trenches under grade beams: Backfill trenches excavated under grade beams with crushed stone

D. Backfill voids with satisfactory soil while removing shoring and bracing.

E. Initial Backfill:

   1. Soil Backfill: Place and compact initial backfill of subbase material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.

      a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

F. Final Backfill:

   1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.

G. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use engineered fill.
   3. Under building, use satisfactory soil material.
   4. Under grade beams, use satisfactory soil material.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
   1. Under structures, pavements, and walkways, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
   2. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
   3. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.15 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
   1. Turf or Unpaved Areas: Plus or minus 1 inch.
   2. Walks: Plus or minus 1 inch.
   3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1 inch when tested with a 10-foot straightedge.

3.16 SUBSURFACE DRAINAGE

A. Subdrainage Pipe: Specified in Section 334600 "Subdrainage."

B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
1. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.

C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.

1. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.
2. Place and compact impervious fill over drainage backfill in 6-inch-thick compacted layers to final subgrade.

3.17 SUBBASE UNDER WALKS

A. Place subbase course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course under pavements and walks as follows:

1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Shape subbase course[and base course] to required crown elevations and cross-slope grades.
3. Place subbase course 6 inches or less in compacted thickness in a single layer.
4. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.18 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.

2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.19 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000
PROJECT: Town of Fairfield - Penfield Pavilion Facility

To: DeStefano & Chamberlain
50 Thorpe Street
Fairfield CT 06824
US

ATTN: Kevin Chamberlain

JOB: 140543

DATE: 03/09/2016
RE: Aggregates / Bedding Materials

WE ARE SENDING: |
| SUBMITTED FOR: |
| ACTION TAKEN: |
| Shop Drawings | ✔ Approval | Approved as Submitted |
| Letter | Your Use | Approved as Noted |
| Prints | As Requested | Returned After Loan |
| Change Order | Review and Comment | Resubmit |
| Plans | | Submit |
| Samples | SENT VIA: | Returned |
| Specifications | Attached | Returned for Corrections |
| Other: | | |
| | Submittal: | |

Line Item Package Code Rev. QTY Date Description Status
1 Submittal 001-312000 1 03/09/2016 Aggregates / Bedding Materials For Review and Approval

SHOP DRAWING REVIEW

DeStefano & Chamberlain, Inc.

☐ Approved ☑ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Not Reviewed

Review is for general compliance with Contract Documents. This review does not relieve the Contractor from his obligation to comply with the Contract Documents. The Contractor is responsible for correctness of all dimensions and fit.

3-21-2016 By KHC

1) The 1 ¾" Processed is for the sidewalks, concrete stairs, dumpster pad, and transformer pad.
2) The 3" Processed is for backfilling under the building.
3) The 2" stone is for the tracking pad.
4) The ¾" stone is for the underslab recharge system, retaining wall drainage, and fill for inside the stair foundations.
5) The 1 ¼" stone is for the Retaining wall.
6) The last two sheets, ¾" to 3/8" crushed stone and ¾" crushed stone blend is a representative sample of the stone that will be used for the revetment. Because the stones are too large to test individually, these tests are to show the soundness and resistance to degradation of the stone that will be used for the revetment. These samples are of the same rock, just crushed smaller.

Refer to D&C Field Report for site visit to Haynes Quarry on 3-16-2016 re: revetment boulders
PROJECT: 14-796 Penfield Pavilion
DATE: 3/8/2016

TO: Shawmut Design and Construction
116 Washington Ave
North Haven, CT 06473

REF: Submittals
Aggregates and Bedding Materials

SITE LOCATION: Penfield Beach, Fairfield

ATTN: Marc Vincent

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<td>Other: Aggregate and Bedding Materials</td>
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Remarks: Please see attached data for aggregates and bedding materials to be used at the Penfield Pavilion. Coastal Materials Testing Lab results are attached to show quality of Armour stone that will be used to revetment. Due to the size (3ft+) it cannot be tested, so these are provided as supplement.
LA ABRASION REPORT

CLIENT: Julian Development, LLC Q4
615 Plains Road
Milford, CT 06461

PROJECT: Fairfield Recycle Yard

REPORT #: 5503
DATE: 5/5/15
AMBIENT TEMP: N/A
CLIENT REP: N/A

TYPE OF INSPECTION: Abrasion Test

This letter is to certify that the above sample was tested in accordance with ASTM C-131.

Apparatus Data

Description: LA Abrasion Machine
Solltest Model: M-500
Type of Counter: 5 SSP 7-1-L-CL with a Ratio 1:1
Manufacturer: Solltest Incorporated
Type of Motor: GOAW - 36
Manufacturer: Current Capital Instruments

Environmental Conditions At The Time of Testing
Temperature: 76°F
Relative Humidity: 55%

Laboratory Test Results

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<th>Los Angeles Abrasion ASTM C131, AASHTO T96</th>
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<td>Revolutions of Drum</td>
<td>500 revolutions at 30 to 33 rpm</td>
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<td>Steel Drum Size</td>
<td>200 mm dia x 178 mm long</td>
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<td>Steel Spheres</td>
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<td>Initial Sample Size (after wash &amp; dry)</td>
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<td>Sample Size Coarser than #12 after test (Wet Wash)</td>
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<td>Amount Passing No. 12 Sieve (1.70 mm sieve)</td>
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<td>Percent Loss</td>
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Note: The amount passing a No. 12 sieve is defined as the weight loss. The material passing the #12 sieve is then weighed and compared to the original sample size. The difference in weight is reported as percent of the original weight and called the "percent loss."
CLIENT: Julian Enterprise  
615 Plains Road  
Milford, CT  

PROJECT: Reclaimed Process  

DATE: 6/4/2015  
SAMPLE #:  
LAB TECH: Dennis Kieley  
SAMPLED BY: Dennis Kieley  

Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate (ASTM C88)

Solution Used: Magnesium Sulfate  
1 1/4" Processed

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Total Passing = 7.21

REVIEWED BY: [Signature]
# SIEVE ANALYSIS (ASTM DESIGNATION C136 and AASHTO DESIGNATION T 27-88)

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</tr>
<tr>
<td>SAMPLE USE:</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sieve Size (in./no.)</th>
<th>Weight (Retained)</th>
<th>% Passing (Total Sample)</th>
<th>CT DOT M.02.06 B (Required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5&quot;</td>
<td>0</td>
<td>100</td>
<td>100%</td>
</tr>
<tr>
<td>3.5&quot;</td>
<td>0.0</td>
<td>100</td>
<td>90-100%</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>197.1</td>
<td>93</td>
<td>55-95%</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>1988.8</td>
<td>31</td>
<td>25-60%</td>
</tr>
<tr>
<td>#10</td>
<td>2323.1</td>
<td>19</td>
<td>15-45%</td>
</tr>
<tr>
<td>#40</td>
<td>2592.0</td>
<td>9</td>
<td>5-25%</td>
</tr>
<tr>
<td>#100</td>
<td>2755.6</td>
<td>4</td>
<td>0-10</td>
</tr>
<tr>
<td>#200</td>
<td>2813.2</td>
<td>2</td>
<td>0-5</td>
</tr>
<tr>
<td>Pan</td>
<td>2861.1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

1 1/4" Processed

---

### Accepted

![Graph of Percent Passing vs. Sieve Size](image)

### Rejected

![Graph of Percent Passing vs. Sieve Size](image)

---

REVIEWS BY:

---

NVLAP®

NVLAP LAB CODE 200871-0
### Sieve Analysis

**Sample #:** 5503  
**Sample Size:** 2862.2  
**Sample Source:**  
**Sample Use:**

<table>
<thead>
<tr>
<th>Sieve Size (in./no.)</th>
<th>Weight (Retained)</th>
<th>% Passing (Total Sample)</th>
<th>CT DOT M.02.06 A (Required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5&quot;</td>
<td>0</td>
<td>100</td>
<td>100%</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>197.1</td>
<td>93</td>
<td>65-100%</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>1998.8</td>
<td>31</td>
<td>25-60%</td>
</tr>
<tr>
<td>#10</td>
<td>2321.1</td>
<td>19</td>
<td>15-45%</td>
</tr>
<tr>
<td>#40</td>
<td>2592.0</td>
<td>9</td>
<td>5-25%</td>
</tr>
<tr>
<td>#100</td>
<td>2755.6</td>
<td>4</td>
<td>0-10%</td>
</tr>
<tr>
<td>#200</td>
<td>2813.2</td>
<td>2</td>
<td>0-5%</td>
</tr>
<tr>
<td>Pen</td>
<td>2861.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 1/4" Processed

---

**X**  
Accepted

---

**REVIEWED BY:**

NVLAP LAB CODE 200871-0

---

CLIENT: Julian Enterprise  
615 Plains Road  
Milford, CT

DATE: 2/23/2016

SAMPLE #: 5591

LAB TECH: Dennis Kiley

SAMPLED BY: Client

Description: 3" Recycled

SIEVE ANALYSIS (ASTM DESIGNATION C136 and AASHTO DESIGNATION T 27-88) 

SAMPLE #: 5591

SAMPLE SIZE: 8887.2

SAMPLE SOURCE: Fairfield Yard

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>WEIGHT (Retained)</th>
<th>% PASSING (Total Sample)</th>
<th>CT DOT M.02.06 B (Required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5&quot;</td>
<td>0.0</td>
<td>100</td>
<td>100%</td>
</tr>
<tr>
<td>3.5&quot;</td>
<td>0.0</td>
<td>100</td>
<td>90-100%</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>1071.6</td>
<td>88</td>
<td>55-95%</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>5855.3</td>
<td>34</td>
<td>25-50%</td>
</tr>
<tr>
<td>#10</td>
<td>6783.9</td>
<td>24</td>
<td>15-45%</td>
</tr>
<tr>
<td>#40</td>
<td>7909.4</td>
<td>11</td>
<td>5-25%</td>
</tr>
<tr>
<td>#100</td>
<td>8489.3</td>
<td>5</td>
<td>0-10%</td>
</tr>
<tr>
<td>#200</td>
<td>8760.9</td>
<td>1.3</td>
<td>0-5%</td>
</tr>
<tr>
<td>Pan</td>
<td>8885.1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

3" Processed

Percent Passing

Sieve Size (In./no.)

NVLAP LAB CODE 200871-0

REVIEWED BY:

Providing materials testing excellence since 1973. In accordance with provisions of chapter 301 and 641 sect 20-276e of the general statutes of the state of Connecticut. Rev 10St06
Particle Size Distribution Report

TEST RESULTS (ASTM C136)

<table>
<thead>
<tr>
<th>Opening Size</th>
<th>Percent Finer</th>
<th>Spec. E (Percent)</th>
<th>Pass? (X=E Fall)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1/2</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>2.00</td>
<td>96.0</td>
<td>90.0 - 100.0</td>
<td></td>
</tr>
<tr>
<td>1-1/2</td>
<td>44.7</td>
<td>35.0 - 70.0</td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>5.3</td>
<td>0.0 - 15.0</td>
<td></td>
</tr>
<tr>
<td>1/2</td>
<td>3.4</td>
<td>0.0 - 5.0</td>
<td></td>
</tr>
</tbody>
</table>

Material Description

2" Stone

Atterberg Limits (ASTM D 4318)

<table>
<thead>
<tr>
<th>PL</th>
<th>LL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Classification

USCS (D 2487) = N/A
AASHTO (M 145) = N/A

Coefficients

<table>
<thead>
<tr>
<th>D60</th>
<th>D65</th>
<th>D70</th>
<th>D75</th>
<th>D10</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.3812</td>
<td>D60 = 46.8705</td>
<td>D60 = 41.2078</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.1929</td>
<td>D60 = 34.6709</td>
<td>D10 = 30.0645</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.9679</td>
<td>Cu = 1.47</td>
<td>Cc = 1.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks

Material Meets the Greenwich High School Spec. 31 20 00 Section 1.3-P (Washed Gravel) and the CT DOT M.01.0 #3 Stone

Date Received: 06/25/2015  Date Tested: 06/25/2015

Tested By: Greg Ailapa

Checked By: Saleh Al-Bakri

Title: Lab Manager

Source of Sample: Pit Testing - Shelton
Sample Number: 12-818

Date Sampled: 06/25/2015

COASTAL MATERIALS TESTING LAB, LLC West Haven, Connecticut

Client: J.J. Brennan
Project: Greenwich High School

Project No: 12-007

Figure
**Particle Size Distribution Report**

- **Percent Finer**
  - 100.0
  - 90.0
  - 20.0
  - 0.0

- **Grain Size - mm**
  - 100
  - 10
  - 1.0

- **% Stones**
  - 0.0

- **% +3"**
  - 9.7

- **% Gravel**
  - 97.0

- **% Sand**
  - 2.5

- **% Silts**
  - 0.0

- **% Clays**
  - 0.0

**TEST RESULTS (ASTM C136)**

<table>
<thead>
<tr>
<th>Opening Size</th>
<th>Percent Finer</th>
<th>Spec.*(%Finer)</th>
<th>Pass?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td>90.3</td>
<td>90.0 - 100.0</td>
<td></td>
</tr>
<tr>
<td>1/2</td>
<td>20.8</td>
<td>20.0 - 35.0</td>
<td></td>
</tr>
<tr>
<td>3/8</td>
<td>8.2</td>
<td>0.0 - 15.0</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>2.5</td>
<td>0.0 - 5.0</td>
<td></td>
</tr>
</tbody>
</table>

**Material Description**

- 3/4" Stone

- **Atterberg Limits (ASTM D4318)**
  - PL = N/A
  - LL = N/A
  - PI = N/A

- **USCS (D 2487)= N/A**
- **AASHTO (M 145)= N/A**

- **Coefficients**
  - D90 = 18.9971
  - D88 = 18.1543
  - D90 = 15.9980
  - D60 = 14.5109
  - D90 = 12.7163
  - D60 = 10.8656
  - Cu = 1.55
  -Cc = 1.06

- **Remarks**
  - Material Conforms with CT DOT M.01,01 No.6

**Date Received:** 06/23/2015  
**Date Tested:** 06/23/2015  
**Tested By:** John Andrichetti  
**Checked By:** Salah Al-Bakri  
**Title:** Lab Manager

**Source of Sample:** Pit Testing - Shelton  
**Sample Number:** 15-807  
**Date Sampled:** 06/23/2015

**COASTAL MATERIALS TESTING LAB, LLC**  
**West Haven, Connecticut**  
**Client:** J.J. Brennan  
**Project:** Various  
**Project No.:** 12-007  
**Figure:**
Particle Size Distribution Report

Test Results (ASTM C136)

<table>
<thead>
<tr>
<th>Opening</th>
<th>Percent</th>
<th>Spec.*</th>
<th>Pass?</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>99.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#10</td>
<td>79.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#30</td>
<td>46.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#50</td>
<td>28.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#100</td>
<td>13.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#200</td>
<td>6.8</td>
<td>0.0 - 10.0</td>
<td></td>
</tr>
</tbody>
</table>

Material Description

Pipecover

Attenuation Limits (ASTM D 4318)
PL = N/A
LL = N/A
Pil = N/A

Classification
USCS (D 2487) = N/A
AASHTO (M 145) = N/A

Coefficients
D50 = 2.9605
D60 = 2.4656
D60 = 1.0045
D10 = 0.6888
D10 = 0.3222
D10 = 0.1635
C_u = 9.00
C_c = 0.93

Remarks
Material Conforms with CT DOT M.08.01

Date Received: 06/23/2015
Date Tested: 06/23/2015
Tested By: John Andrichetti
Checked By: Salah Al-Bakri
Title: Lab Manager

Source of Sample: Pit Testing - Shelton
Sample Number: 15-801

COASTAL MATERIALS TESTING LAB, LLC
West Haven, Connecticut

Client: J.J. Brennan
Project: Various
Project No: 12-007

CT DOT M.08.01 Bedding Material

What material is this?
Particle Size Distribution Report

<table>
<thead>
<tr>
<th>GRAIN SIZE - mm.</th>
<th>Coarse</th>
<th>Medium</th>
<th>Fine</th>
<th>V. Cst</th>
<th>Crs.</th>
<th>Total</th>
<th>Med.</th>
<th>Fine</th>
<th>V. Fine</th>
<th>Crs.</th>
<th>Fine</th>
<th>% Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Stones</td>
<td>% +3&quot;</td>
<td>% Gravel</td>
<td>% Sand</td>
<td>% Silt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>99.7</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TEST RESULTS (ASTM C136)

<table>
<thead>
<tr>
<th>Opening Size</th>
<th>Percent Finer</th>
<th>Spec.* (Percent)</th>
<th>Pass? (X=Fail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>1-1/2</td>
<td>93.2</td>
<td>90.0 - 100.0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>21.6</td>
<td>20.0 - 55.0</td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td>0.3</td>
<td>0.0 - 15.0</td>
<td></td>
</tr>
<tr>
<td>3/8</td>
<td>0.0</td>
<td>0.0 - 5.0</td>
<td></td>
</tr>
</tbody>
</table>

Material Description

1.25 Inch Stone

Atterberg Limits (ASTM D 4318)

<table>
<thead>
<tr>
<th>PL</th>
<th>LL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Classification

USCS (D 2487) = N/A

AASHTO (M 145) = N/A

Coefficients

<table>
<thead>
<tr>
<th>D85</th>
<th>D90</th>
<th>D95</th>
<th>D99</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.0865</td>
<td>35.7878</td>
<td>31.2148</td>
<td></td>
</tr>
<tr>
<td>29.7145</td>
<td>26.7713</td>
<td>24.1239</td>
<td></td>
</tr>
<tr>
<td>22.9312</td>
<td>1.36</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

Remarks

Material Conforms With Conn DOT M.01.01 #4

Date Received: 02/18/2016  Date Tested: 02/18/2016
Tested By: John Andrichetti
Checked By: Salah Al-Bakri
Title: Lab Manager

Date Sampled: 02/18/2016
EXHIBIT 6
## Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

### AASHTO T96/ASTM C131

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Weight of indicated size, g</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Passing</td>
<td>Retained On</td>
</tr>
<tr>
<td>1-1/2</td>
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<tr>
<td>1</td>
<td>3/4</td>
</tr>
<tr>
<td>3/4</td>
<td>1/2</td>
</tr>
<tr>
<td>1/2</td>
<td>3/8</td>
</tr>
<tr>
<td>3/8</td>
<td>1/4</td>
</tr>
<tr>
<td>1/4</td>
<td>#4</td>
</tr>
<tr>
<td>#4</td>
<td>#8</td>
</tr>
</tbody>
</table>

### Test Results:

Grading Used:

- B

Dry Weight of Sample before test, g (a):

5000 g

Dry Weight of Sample after test, g (b):

3518.5 g

Weight Loss, g (a-b) (c):

1481.5 g

Percent Loss (c/a):

29.63%
## Soundness of Aggregate by Use of Magnesium Sulfate

**ASTM C88**

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Retained On</th>
<th>Grading of Original Sample, (%)</th>
<th>Weight of Test Fractions Before Test, (g)</th>
<th>Percentage Passing Designated Sieve After Test</th>
<th>Weighted Percentage Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1/2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1-1/2</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>3/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td>1/2</td>
<td>66.8</td>
<td>670.1</td>
<td>0.16</td>
<td>0.11</td>
</tr>
<tr>
<td>1/2</td>
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<td>0.11</td>
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</tr>
<tr>
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</tr>
<tr>
<td>#16</td>
<td>#30</td>
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</tr>
<tr>
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<td><strong>Totals</strong></td>
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<td><strong>1003.1</strong></td>
<td><strong>0.49</strong></td>
<td><strong>0.22</strong></td>
</tr>
</tbody>
</table>

**Remarks:**  5 cycles test.

Material showed minimal signs of crumbling and flaking
Fresh Magnesium Sulfate Solution Used

Reviewed by Salah Al-Bakri

The above reported data is the property of the Client. No reproduction of the above data without the sole permission of Coastal Materials Testing Lab, LLC.
EXHIBIT 7
Kristal: The re-built Penfield Pavilion was done in two phases. Phase 1 was approved on 1/23/07 Phase 2 on 5/11/10. I have attached the Coastal Site Plan report from the 6/9/15 repair approval along with a phasing plan. I do not see any DEEP correspondence in the files. Let me know if you need any additional information. The actual building plans are larger and difficult to scan, but I will do my best to provide whatever else you may need.

Jim

James R. Wendt, AICP
Asst. Planning Director
Town of Fairfield
(203) 256-3050
Kristal: It is my understanding that the existing bulkhead was reviewed prior to its installation and was deemed to be above the coastal jurisdiction line. I have copied Laura Pulie from the Town’s Engineering Dept. who is involved with the flood certification for this project.

Jim

-----Original Message-----
From: Kallenberg, Kristal [mailto:Kris Kallenbergt@ct.gov]
Sent: Wednesday, February 24, 2016 3:21 PM
To: Wendt, James
Subject: Penfield pavilion-proposed structure
Importance: Low

Hi Jim,

I am coordinating with a DEEP colleague who informed that Fairfield was getting an HUD grant to be used towards the improvements to the Penfield Pavilion. I understand that the proposal includes some new rip rap that would be placed waterward of the existing shoreline flood and erosion control structure and landward of OLISP's permitting jurisdiction. I just wanted to remind you that the new rip rap would be a potential new shoreline flood and erosion control structure and would require a mandatory referral to OLISP for comment within 15 days of receipt of the proposal. I look forward to commenting on the proposal. Please contact me if you have any questions about this or other coastal concerns.

Thank you.

Regards, Kristal

Kristal Kallenberg
Environmental Analyst 2
Office of Long Island Sound Programs
CT DEEP
79 Elm Street
Hartford, CT 06106
Phone: 860-424-3760
Fax: 860-424-4054
Kristal: Here is the link for the entire plan set. I had sent you last week the Coastal Site Plan written report. Let me know if you have any issues opening the file. As we discussed last week, the TPZ has already approved this plan. I’m sorry for the jurisdictional confusion. Please call me if you require any additional information.

jim

A transfer (File Transfer) has arrived on the Tighe & Bond, Inc. Info Exchange Site.

Download all associated files

Additional links:

Reply to All

Project Name: FAIRFIELD-Penfield Pavilion - HUD & DOH Environmental Permitting
Project Number: F0439-5

From: Jon Richer (Tighe & Bond, Inc.)
To: LPulie@fairfielddct.org; jwendt@fairfielddct.org
CC:
Subject: Penfield Pavilion
Sent via: Info Exchange
Expiration Date: 4/24/2016
Remarks: Laura & Jim,

Please use this link to retrieve the drawings for Penfield Pavilion. You should be able to forward this link to CTDEEP as well if necessary. CTDEEP IWRD received two full size copies of this plan set with the FM Certification application as well.

Jon

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<tr>
<th>Transferred Files</th>
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<tr>
<td>NAME</td>
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<td>05_Attachment G</td>
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<td>Drawings.pdf</td>
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Kristal: Attached is the letter we discussed yesterday requesting comments on this project. It is my understanding that Stacy Pappano has been coordinating with Laura Pulie in our Engineering Dept on this matter. It would be greatly appreciated if any comments that you may have be submitted simultaneously with Stacy’s response to Laura. Please let me know if you have any questions or need any additional information.

Thank you.
Jim

James R. Wendt AICP
Asst. Planning Dir.
(203) 256-3050

-----Original Message-----
From: Kallenberg, Kristal [mailto:Kristal.Kallenberg@ct.gov]
Sent: Wednesday, February 24, 2016 3:21 PM
To: Wendt, James
Subject: Penfield pavilion-proposed structure
Importance: Low

Hi Jim,
I am coordinating with a DEEP colleague who informed that Fairfield was getting an HUD grant to be used towards the improvements to the Penfield Pavilion. I understand that the proposal includes some new rip rap that would be placed waterward of the existing shoreline flood and erosion control structure and landward of OLISP’s permitting jurisdiction. I just wanted to remind you that the new rip rap would be a potential new shoreline flood and erosion control structure and would require a mandatory referral to OLISP for comment within 15 days of receipt of the proposal. I look forward to commenting on the proposal. Please contact me if you have any questions about this or other coastal concerns.

Thank you.

Regards, Kristal

Kristal Kallenberg
Environmental Analyst 2
Office of Long Island Sound Programs
CT DEEP
79 Elm Street
Hartford, CT 06106
Phone: 860-424-3760
Fax: 860-424-4054
February 26, 2016

Ms. Kristal Kallenberg Dorismond
CT DEP – OLISP
79 Elm Street
Hartford, CT 06106

Re: Penfield Pavilion

Dear Kristal:

This letter is a follow up to our conversation of February 25th, in which you confirmed your receipt of the Coastal Site Plan report and plans for the Penfield elevation that I had sent electronically. Pursuant to your e-mail of February 24th, please provide any comments you may have regarding this project.

Please call us at (203) 256-3050 if you require any additional information.

Very truly yours,

James R. Wendt, AICP
Assistant Director

JRW/ds
Good morning,

I am resending this email to reflect a correction about when the bulkhead was constructed:

Thanks again for pulling together yesterday on short notice to discuss the proposal for flood protection improvements to the Penfield Pavilion. I just wanted to follow up with a summary of the coastal management concerns and recommendations about the proposal.

As previously stated, we are concerned about the incidents of shoreline flood and erosion control structures that were approved without the requisite Coastal Site Plan Review referral to the Office of Long Island Sound Programs (OLISP) pursuant to CGS section 22a-109(d). The existing wooden bulkhead that was constructed in 2012 before Storm Sandy was approved without the mandatory referral to OLISP. Had it been referred to OLISP, it is likely that we would have found the proposal inconsistent with CCMA policies and recommended that the Planning and Zoning Commission pursue alternatives to the bulkhead. Subsequently, another proposal for improvements to the Pavilion which included a new shoreline flood and erosion control structure waterward of the existing bulkhead was also approved without the mandatory referral to OLISP.

I have attached the OLISP shoreline flood and erosion control structures fact sheet which outlines the criteria required for new shoreline flood and erosion control structures. Pursuant to the applicable policies regarding new shoreline flood and erosion control structures in the coastal boundary and in a VE floodplain, we recommend that the existing bulkhead be removed and that the applicant explore alternatives to the rip-rap structure proposed to abut the existing bulkhead. The proposed Penfield Pavilion improvements will bring the structure into compliance with FEMA requirements. Once the Penfield Pavilion is elevated above the BFE and the bulkhead is removed, coastal flood waters would instead impact breakaway walls reducing potential damage to the structure while reducing scour and erosion to the beach.

Some of the ideas proposed by the applicant and project team included an engineered beach and/with an elevated dune-like structure that would consist of a sub base of rip-rap covered by sand. While we are ready to consider alternatives to the existing bulkhead and proposed rip rip structures—we suggest the applicant explore a no-structure or soft-structure approach. If the final project is to include a hard structure, the applicant must ensure that it meets the required criteria to justify the structure in order to be consistent with CCMA policies.

We look forward to discussing how to make this proposal consistent and preserving the coastal resources for this shoreline community.

Regards, Kristal

Kristal Kallenber
Environmental Analyst 2
Office of Long Island Sound Programs
CT DEEP
79 Elm Street
Hartford, CT 06106
Hi Jim,

Please see the attached letter from OLISP regarding the improperly authorized structures at the Penfield Pavilion. Please contact me with any questions you may have.

Regards, Kristal

Kristal Kallenberg
Environmental Analyst 2
Office of Long Island Sound Programs
CT DEEP
79 Elm Street
Hartford, CT 06106
Phone: 860-424-3760
Fax: 860-424-4054
April 14, 2016

James R. Wendt AICP
Asst. Planning Director
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

Re: Penfield Pavilion Improvements

Dear Mr. Wendt,

Thank you for the opportunity to formally follow-up our email sent on March 10, 2016 (see enclosure). As you know, two shoreline flood and erosion control structures were approved for the Pavilion without the requisite Coastal Site Plan Review referral to the Office of Long Island Sound Programs (OLISP) pursuant to CGS section 22a-109(d). Had the proposals for both structures been referred as statutorily required, we would have found both structures inconsistent with Connecticut Coastal Management Act policies and strongly recommended that the Plan and Zoning Commission deny the proposal and pursue other alternatives.

One of the structures, the existing wooden bulkhead, was constructed in 2012 prior to Storm Sandy, where it created significant obstructions to the flow of flood waters under the building. In a report dated May 4, 2015 (see enclosure), Kevin H. Chamberlain of DeStefano and Chamberlain Inc., commented that “the bulkhead was a significant source of wave reflection and scour during Sandy, resulting in the loss of about 8 feet of elevation in front of the bulkhead. The sands were subsequently collected from the neighborhood by DPW crews and re-deposited on the beach.” Subsequently, another proposal for improvements to the Pavilion which included rip-rap, a new shoreline flood and erosion control structure, waterward of the existing bulkhead was also approved on June 9, 2015 without the mandatory referral to OLISP.

The resultant damage to the Pavilion and significant beach loss from Sandy reinforce our concerns that the hard-structure approach is not appropriate for this site and may potentially lead to more property damage and beach loss. Therefore, to avoid potential legal jeopardy and minimize flood hazards, the Town should not move forward with the installation of the improperly authorized structures. Pursuant to the applicable Coastal Management Act policies regarding new shoreline flood and erosion control structures in the coastal boundary and in a VE floodplain, we respectfully advise that the Town of Fairfield remove the existing bulkhead in its entirety as well as any other existing, improperly authorized structures. Alternatively, a proposal to cut the bulkhead by a minimum of 5’ below the existing grade would also be acceptable. For legal clarity, we recommend that both approvals for the bulkhead and the riprap should also be formally revoked.
Properly elevating the Penfield Pavilion above the BFE, installing breakaway walls and removing the bulkhead could reduce potential damage to the structure in the future, while reducing scour and erosion to the beach, which is a significant coastal resource and recreational amenity for the citizens of Fairfield.

We hope these comments have been helpful to the Commission. We would be happy to meet with you or any town body to discuss resilient options for elevating and protecting the pavilion. If you have any questions about this or any other coastal management matter, please feel free to contact Ms. Kristal Kallenberg of my staff by phone at (860) 424-3760 or by email at Kristal.Kallenberg@ct.gov. Thank you.

Sincerely,

[Signature]

Brian P. Thompson
Director
Office of Long Island Sound Programs

Enclosures: OLISP email dated March 10, 2016
Report dated May 4, 2015, DeStefano and Chamberlain Inc.,

cc: Mike Tetreau, First Selectman of Fairfield
cc: (email) Robert Klee, Commissioner of DEEP
     Michael Sullivan, Deputy Commissioner
     Betsey C. Wingfield, Bureau Chief
EXHIBIT 8
April 18, 2016

Mr. Dana Conover
State of Connecticut PA Coordinator
25 Sigourney Street, 6th Floor
Hartford, CT 064106

Re: FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

Dear Mr. Conover:

The Town of Fairfield respectfully requests that PW 680 for the Penfield Pavilion be amended to align the PW’s scope of work with that of Fairfield’s final design for the Pavilion. As you are aware, the Town was still in the process of finalizing the design when this PW was issued and obligated.

Attached, please find the scope alignment for the amendment as prepared by The Town of Fairfield’s design engineer/architect DeStefano & Chamberlain, Inc. The PW scope should be amended to reflect the scope as described in the attachment.

Also attached is cost data summary for $915,020.39 for work completed that is mentioned in the original PW but not included in the initial PW obligation as all charges had not been identified at that time. The work completed is largely comprised of stabilization services that were needed immediately after the storm and subsequent coastal studies, engineering design, and construction drawings (which have already been provided to the State). Invoicing and proof of payments will be provided via separate emails by Bruce Smith as these files are numerous.

Thank you again for your continued support in Fairfield’s Disaster Recovery process.

Sincerely,

[Signature]
Joseph Michelangelo, PE
Director of Public Works
SCOPE ALIGNMENT

FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

The following has been prepared by The Town of Fairfield’s Design Architect/Engineer, DeStefano & Chamberlain, Inc. The information herein summarizes the major components of the scope of work for the project:

A. Pavilion (aka West Wing): The finished portion of the Pavilion will remain intact and be re-utilized. Exterior open decks will be demolished for later replacement with inexpensive on grade boardwalks. The building will be shored on temporary steel beams and cribbing towers, set onto dollies, rolled into the parking lot and parked for several months on additional cribbing braced with guy cables. The old foundations will be picked out of the ground, and be incorporated into the proposed revetment discussed later, to reduce disposal costs. Timber piles will be driven to the required capacity to support building loads and to the embedment required to resist scour, tip elevation -10’ NAVD. Concrete grade beams will be poured to cap the piles and transfer loads to them from the structure. The existing structure will be rolled back into the same position as existing, elevated to meet V zone elevation standard, and supported on new steel columns and beams underneath the building. A portion of the uncovered deck area that was removed will be reconstructed; the majority will be replaced in kind by simple on grade boardwalks as a cost savings measure. New stairs and ramps will be constructed for access to the building. Utilities will be reconnected. All necessary repairs to damage to electrical, HVAC, fire protection, and alarm systems will be performed. Similarly, other damaged items in the building including flooring, walls, and ceilings will be repaired. Also included in the repairs will be the roofing, lighting, and plumbing fixtures. Total enclosed floor area remains the same as existing at 7,470 square feet.

The finish floor will be set at elevation 14.5’ NAVD, resulting in underside of lowest structural member being at or above the BFE of 13.0’ NAVD. The foundation system will be flood-resistant, and will conform to the current Building Code and FEMA model regulations. The underside of the structure will also meet V zone free of obstruction requirements.

B. After a thorough cost comparison by Shawmut (the Town’s selected Construction Manager) it was determined to be more cost effective to demolish and reconstruct the unfinished Locker Wing rather than moving the existing structure twice and elevating it. Existing plumbing and lighting fixtures will be salvaged, and then the building will be demolished. The old foundations will be picked out of the ground, and be incorporated into the proposed revetment discussed later, to reduce disposal costs. Timber piles will be driven to the required capacity to support building loads and to the embedment required to resist scour, tip elevation -10’ NAVD. The move to new construction for this wing allowed a savings on foundation costs as well: timber “split cap” style doubled up beams can be bolted directly to the piles, eliminating concrete work under the building. To reduce the visual impact of the new construction, the exterior wall height was reduced from existing design, and the footprint of the wing was reshaped to more square than the former rectangular building. A program change was made to make the internal renters’ bathrooms smaller, and the external public restrooms bigger. To improve circulation
and beach access, the two wings were separated with a new continuous covered breezeway, to allow beach goers to go from the parking lot to the beach without having to go inside or around the building. The new configuration is a more efficient design with better access to both the locker and restroom facilities and to the beach. A portion of the uncovered deck area that was removed will be reconstructed as covered deck; the majority will be replaced in kind by simple on grade boardwalks as a cost savings measure. New stairs and ramps will be constructed for access to the building. All new M/E/P systems will be installed and tied into the existing Pavilion. Enclosed floor area of the new Locker Wing will be 7,516 square feet, with the roofed over Breezeway with new stair and ramp to parking lot at 1,851 square feet, for a total of 9,367 square feet. This is a reduction of floor area of approximately 3% versus the existing Locker Wing, which is negligible.

C. The exterior wooden deck will be demolished and rebuilt. A new driven wooden pile system will be installed, and a wood deck will be constructed. Due to changes in the flood Zone criteria, the building will be raised to an elevation so that the lowest structural member is above elevation 13. Because there transition between the elevation of the deck and the beach is greater due to increased height of the building, the square footage of the deck has been reduced. Replacing the deck will be a patio set at elevation 12, midway between the elevation of the building height and the beach area adjacent to the building. While not part of the building, it provides for outdoor seating and function, provides an intermediate area between the elevation of the deck and beach sand, and is much less costly to construct than an elevated deck, as no structural components such as timber piles, will be required for construction of the patio. The structured deck up at floor level, both roofed and open, is 5,851 square feet. The patio area is 4,061 square feet. This provides a total outdoor floor area of 9,912 square feet, which is 10% less than existing. This reduction provides site area for landscaping between the building and the parking lot, and between the building and bulkhead. The structured deck was also reduced or eliminated at each end of the building so as to mitigate the concern about blocking neighbor's views of the water once the building is raised.

D. The parking lot will be regraded by placing low cost road millings to steepen the pitch slightly. This raises the high point of the lot along the front of the building to soften the visual impact of the raised building and reduce the extent of stairs and ramps required from the parking lot level. A new intermediate grade plane will be established under and around the building by placing fill up to elevation 11' (under) and 12' (around). This creates a functional transition level to the new building elevation, beach-level recreation spaces adjacent to the Locker Wing and Concession Stand, and continues the dune crest elevation under the building for minimizing flood water entry to the inland costal plane. The footprint of the parking lot and number of spaces are being maintained.

E. The existing timber bulkhead to the beach side on the south will be retained and the openings permanently sealed with whalers and sheeting. The grade on the building side of the bulkhead will be filled flush with the top, at elevation 12.0'. This creates the aforementioned intermediate grade plane that lessens the transition from the building to grade and grade to beach. The bulkhead will be armored with a stone revetment buried below the sand level to act as scour protection and disperse wave energy instead of reflecting off the vertical bulkhead face. Floodwaters will flow freely under the building during severe storm events.
May 11, 2016

Mr. Dana Conover
State of Connecticut PA Coordinator
25 Sigourney Street, 6th Floor
Hartford, CT 064106

Re: FEMA Disaster Number DR-4087-CT
Project Worksheet (PW) # PA-01-CT-4087-PW-680
Category G – Large Project – Penfield Pavilion

Dear Mr. Conover:

The Town of Fairfield respectfully requests that PW 680 for the Penfield Pavilion be amended to align the PW's scope of work with that of Fairfield's final design for the Pavilion. As you are aware, the Town was still in the process of finalizing the design when this PW was issued and obligated. Please note this letter supersedes my similar request letter dated 4/18/16. Paragraph E in the Scope Alignment, which pertained to a bulkhead / revetment, has been deleted. This work is no longer planned to be performed as per the Connecticut DEEP Office of Long Island Sound.

Attached, please find the scope alignment for the amendment as prepared by The Town of Fairfield's design engineer/architect DeStefano & Chamberlain, Inc. The PW scope should be amended to reflect the scope as described in the attachment.

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Thank you again for your continued support in Fairfield's Disaster Recovery process.

Sincerely,

[Signature]
Joseph Michelangelo, PE  
Director of Public Works  

SCOPE ALIGNMENT  

FEMA Disaster Number DR-4087-CT  
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D. The parking lot will be regraded by placing low cost road millings to steepen the pitch slightly. This raises the high point of the lot along the front of the building to soften the visual impact of the raised building and reduce the extent of stairs and ramps required from the parking lot level. A new intermediate grade plane will be established under and around the building by placing fill up to elevation 11’ (under) and 12’ (around). This creates a functional transition level to the new building elevation, beach-level recreation spaces adjacent to the Locker Wing and Concession Stand, and continues the dune crest elevation under the building for minimizing flood water entry to the inland coastal plane. The footprint of the parking lot and number of spaces are being maintained.
June 30, 2016

Mr. Dana Conover  
State of Connecticut PA Coordinator  
25 Sigourney Street, 6th Floor  
Hartford, CT 06106

Re: FEMA Disaster Number DR-4087-CT  
Project Worksheet (PW) # PA-01-CT-4087-PW-680  
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Additionally, I have attached a letter from the Town of Fairfield NFIP Coordinator regarding this project.

Thank you again for your continued support in Fairfield’s Disaster Recovery process.

Sincerely,

[Signature]

Joseph Michelangelo, PE  
Director of Public Works
SCOPE ALIGNMENT

FEMA Disaster Number DR-4087-CT
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spaces are being maintained.
28 October 2016

Mr. George F. Vanderschmidt  
Deputy Director  
Recovery Division  
FEMA Region 1  
99 High Street  
Boston, MA 02110

RE: Request for Information:

The Town of Fairfield  
DR-4087-CT PW-680 (Penfield Pavilion)

Dear Mr. Vanderschmidt:

Attached please find the Town of Fairfield’s response to FEMA’s 30 September 2016 RFI on Fairfield’s DR-4087 Penfield Pavilion Project PW-680. Having reviewed the Fairfield response, the State believes all questions identified in the RFI have been accurately addressed in the response.

In an attempt to add weight and clarity to Fairfield’s response the DEMHS, as Grantee would like to provide the following comments for your consideration.

Background

As early as 8 March 2016 Fairfield, through its contractor, identified to the Grantee that they were considering a modified approach in restoration of the Penfield Pavilion. The Grantee, recognizing that FEMA would consider any alteration from language included in the PW as approved on 17 December 2015 to be a change in Scope of Work (SOW), discussed with Fairfield’s representative the need for a formal request to change the SOW included in the PW. At that time DEMHS also identified this issue to FEMA during the FEMA/State weekly Public Assistance (PA) conference calls and advised that the Grantee was working with the sub-grantee to develop a request for a change to the SOW of this project.

The changes Fairfield identified were primarily in the methodology which would be employed in carrying out restoration of this facility, salvaging the least damaged portion of the facility for reuse in the reconstruction of the pavilion in order to reduce the overall cost of the project. Revised plans also included some minor reconfiguration of the razed section of the facility so that the restored facility would better serve its original purpose. It is important to note that these modifications did not change the location, function, or capacity of the facility from its pre-disaster design. Further Fairfield maintains that all changes made to the approved design are in full compliance with local and State requirements. This sentiment is supported by the professional opinions of both the local Floodplain Manager and an experienced and well
recognized engineering firm. Fairfield also identified a need to implement restoration plans quickly to address concerns about the liability incurred while the facility sat in an unused and structurally compromised condition.

The Grantee and sub-grantee engaged in a number of meetings, phone conversations, and correspondences directed at developing a complete and detailed change in SOW request which would accurately identify for FEMA the exact nature of the changes in design and the methodology which would be used in carrying out restoration of the Penfield Pavilion. This was undertaken in order to maintain eligibility and provide FEMA with all the necessary information to quickly and accurately review and approve the proposed changes. It was the intention of both the Grantee and sub-grantee to facilitate the FEMA review in an expeditious manner thereby addressing Fairfield’s concerns about both liability and risk of additional damage to the facility. In the meantime, Fairfield began to demolish the East wing of the facility in accordance with the already approved SOW.

At this time the Grantee and CT Department of Energy and Environmental Protection, (DEEP) began to coordinate efforts on this project to ensure all parties were aware of any changes to this PW and that those changes were in complete compliance with all applicable regulations. On 29 April a request for change in SOW was submitted to FEMA for consideration and a copy was shared with DEEP to facilitate Agency coordination. During this period Fairfield continued to move forward on site preparation work, which was included in the already approved SOW.

On 9 May 2016 DEMHS and DEEP met to discuss some concerns DEEP officials had with the revised restoration plan. The aim of this meeting was to clearly identify these concerns and develop solutions which would both address DEEP’s concerns and maintain eligibility of this project for Public Assistance funding. During this meeting DEEP identified 2 outstanding concerns as follows:

- Coastal Zone Management identified a concern about the “Bulkhead” which had been constructed by Fairfield after affecting repairs to the Pavilion caused during DR-4023. Repair of this bulkhead were incorporated into the DR-4087 PW.

- DEEP NFIP Coordinator identified concern about the proposed facility’s compliance with NFIP standards.

As a result of the identified concerns DEMHS notified FEMA that there may be a need to revise Fairfield’s change in SOW request. This was done to avoid unnecessary review of the submitted SOW change request when additional revisions to the project might be required. A meeting was scheduled with DEMHS PA staff, DEEP staff and Fairfield Town Officials to resolve any potential issues.

On 18 May 2016 DEMHS PA staff, DEEP Coastal Zone Management staff, and the DEEP NFIP Coordinator and Fairfield Town Officials met to discuss resolution of the identified concerns. During that meeting Fairfield, DEMHS and DEEP agreed upon a solution to resolve DEEP CZM concerns with this project in which Fairfield agreed to remove the Bulkhead from the site and any repair of the Bulkhead from the Facility Restoration Plan.
The DEEP NFIP Coordinator expressed concern that the facility may not be compliant with NFIP standards; however, Fairfield’s A&E firm and the local NFIP Coordinator were confident that the plans were in full compliance. To address the issue of NFIP compliance Fairfield proposed that DEMHS and DEEP jointly request FEMA technical assistance in determining the facility’s compliance with NFIP standards since FEMA would be making the final determination. It must also be noted that DEEP and DEMHS are in agreement that requirements under §25-68b through §25-68h have been suspended for projects under FEMA Major Disaster Declaration DR-4087 based on agreement between DEMHS and DEEP. This agreement is in accordance with §25-68e.

At the conclusion of the meeting Fairfield was advised by the Grantee that they would need to revise the restoration plan to account for the removal of the Berm from the site and that an updated restoration plan would need to be submitted to FEMA for review so that the SOW change request would reflect that plan accurately. It should be noted that throughout this process Fairfield Officials expressed a sincere desire to be compliant in all aspects of this project and that this spirit of open cooperation was maintained by all parties. FEMA was again verbally advised of the meeting results during the regular weekly PA Coordination Conference call.

On 1 June 2016 the Grantee, (DEMHS) and the DEEP NFIP Coordinator submitted a joint request for technical assistance to FEMA Region 1 as agreed upon during the 18 May meeting, and a copy of that request was provided to Region 1 PA staff. On 22 June a revised set of plans for the Penfield Pavilion restoration was submitted to Region 1 NFIP and PA staff for review. On 30 September FEMA sent the RFI this letter responds to.

**Issue 1- Compliance with the Applicant’s Zoning Regulations and 44 CRF Part 60**

Based on review of Fairfield’s attached response, site inspections conducted by both DEEP and DEMHS staff, and a number of coordination meetings between DEMHS, DEEP and the Fairfield Town Officials Connecticut believes that Fairfield has adequately demonstrated that the project as designed meets all local Zoning Regulations with the one possible exception. The one item which remains open is compliance with NFIP Regulations, specifically Technical Bulletin 5.

Fairfield has demonstrated that it is the professional opinion of both the local floodplain manager and an experienced and well respected A&E firm that the plan as revised meets this standard.

Throughout this process all parties; DEMHS, DEEP and Fairfield, have demonstrated a cooperative approach aimed at maintaining compliance with all applicable State and local requirements. It was that very purpose which caused Fairfield to request that DEEP and DEMHS seek FEMA technical assistance in bringing this issue to resolution.

**Issue 2- Compliance with the Other Terms and Conditions of the Public Assistance Project Award**

Both the State and the Town of Fairfield acknowledge that FEMA did not formally approve modifications to the project prior to beginning construction. It must also be noted, however, that
Fairfield did begin the process of seeking such approval well before ongoing construction activities varied from those approved in the current SOW for this PW.

Fairfield accurately notes in the RFI response that this facility was structurally compromised during the declared event in October of 2012, and in spite of temporary stabilization efforts had remained in a structurally compromised condition for over 3 years prior to the approval of the PW in its original form. As such the facility was unusable by the public, subject to additional damage, and represented a hazard to the public and a liability to the Town throughout that time. To address these concerns and maintain the safety of the public, Fairfield Public Officials believe they had a responsibility to proceed with restorations of this facility as expeditiously as possible.

Town Officials believed that the modifications made to both the final design and methodology of carrying out restoration were prudent, saved costs on the project, and were in compliance with all applicable requirements. As such Fairfield did not anticipate the length of time required to secure such approval.

**Issue 3- Environmental and Historic Review**

It is the State’s belief that the requested change to the SOW for this PW relates primarily to the methodology Fairfield is using in carrying out the restoration of this facility. Upon completion of this project Fairfield will have returned the facility substantially to pre-disaster condition at the same location with the same capacity and function. Fairfield continues to maintain that the project in its current form still represents a replacement of the facility as originally approved but incorporates the salvage of portions of the original structure to reduce overall project cost, reduce construction debris and minimize the environmental impact of the project.

The footprint for the current project is consistent with the footprint of the SOW already approved by FEMA, and the methodology being employed represents less of a threat to the surrounding environment than the methodology involved in carrying out the project as approved in the original version of this PW.

This, combined with the fact that the State Historic Preservation Officer (SHPO) has already been determined that the Pavilion was neither eligible for inclusion on the National Register of Historic Places nor was it a contributing resource, indicates that there is no need for additional EHP review.

**Conclusion**

Based on ongoing coordination with DEEP and the cooperation of Fairfield staff, the Grantee believes that the one remaining question is if the current designs are in compliance with NFIP requirements and specifically Technical Bulletin 5 as is maintained by the local floodplain manager and the town’s certified engineering firm.

If it is FEMA’s determination that the design as submitted is compliant with standards established in Technical Bulletin 5 both DEMHS and DEEP would recommend that the change
in SOW request be approved as submitted. Further, both agencies would request that PA funding of this project be restored.

Should FEMA determine that the design as submitted is non-compliant with Technical Bulletin 5, the State requests that FEMA provide specific corrective actions which would bring this design into compliance.

Please be aware that this letter is reflective of DEMHS’s position on this matter. DEMHS, as grantee, has attempted to include information from Coordination activities carried out between DESPP and DEMHS in bringing resolution to issues relating to this PW accurately. Although DEMHS has developed this letter in consultation and coordination with DEEP, DEMHS believes it is important that DEEP CZM and NFIP Coordinator are fully aware of all communications involving this project so that these officials have full opportunity to contribute further in this process as they feel appropriate. To achieve that end I am providing a complete copy of the Fairfield and DEMHS response to both the DEEP NFIP Coordinator and the Director of DEEP Office of Long Island Sound Program (OLISP).

Respectfully,

Dana Conover,
Public Assistance Coordinator
State of Connecticut

Cc: Legal
   D. Ifkovic
   B. Thompson
   M. Tetreau
October 17, 2017

Diane Ifkovic
National Flood Insurance Program Coordinator
Connecticut Department of Energy & Environmental Preservation
79 Elm Street
Hartford, CT 06106-5127

Dana Conover
Public Assistance Coordinator
Connecticut Department of Emergency Services & Public Protection
25 Sigourney Street
Hartford, CT 06106-5042


Dear Ms. Ifkovic and Mr. Conover:

The purpose of this letter is to respond to your joint request for technical assistance concerning whether the unapproved scope of work completed by the Town of Fairfield (“Town”) to restore the Penfield Pavilion under Project Worksheet #680 complied with the minimum floodplain management criteria set forth in 44 C.F.R. pt. 60 and Technical Bulletin 5. As detailed in this letter, I have concluded that the Town has not demonstrated compliance with the minimum floodplain management criteria when completing its restorative work on the Pavilion. The Federal Emergency Management Agency (“FEMA”), in light of these violations, is providing the Town with 60 days to provide any additional information before taking any enforcement actions under the National Flood Insurance Program (“NFIP”) and issuing a Public Assistance determination for this project.

I. BACKGROUND

The Penfield Pavilion, owned and operated by the Town, was a 16,756 square foot single story, wood/steel frame structure. Hurricane Sandy damaged the Penfield Pavilion from October 29 to November 9, 2012, and the Town applied through the Connecticut Department of Emergency Services and Public Protection (“Grantee”) under the Public Assistance grant for major disaster declaration FEMA-4087-DR for financial assistance to restore this damage. FEMA originally awarded PW #680 on December 17, 2015, with total estimated project costs of $4,340,054.11.

The approved scope of work under PW #680 was the replacement of the Penfield
Pavilion as a result of flood damage caused by Hurricane Sandy. Following the award, the Grantee later requested a change in the scope of work in April 2016 that involved repair instead of replacement, a scope of work already commenced by the Town without prior FEMA approval. The Grantee later informed FEMA during a phone call on May 12, 2016, that there would be changes and additions to the scope change and asked for FEMA to put the scope change request on hold until it provided additional information. Before submitting the final scope change request, the Grantee and the Connecticut Department of Energy & Environmental Preservation ("CTDEEP") transmitted a joint letter to the Regional Office concerning Project Worksheet 680 on June 1, 2016, that requested technical assistance.

In the technical assistance request letter, the Grantee and CTDEEP explained that the Town decided to repair the Pavilion instead of replacing it, commencing construction on February 29, 2016, without an official change to the original scope of work. They also expressed concern that the revised scope of work may not comply with the minimum requirements of the NFIP, although the Town asserted that the building construction plans complied with NFIP requirements. Because of the disagreement, the Grantee and CTDEEP requested that FEMA review the design plans for NFIP compliance "in order that the PA SOW be re-written accurately so that there are no reimbursement issues upon project completion." They stated that the goal of this review was to "assure all parties of the compliance with the NFIP regulations and to avoid any potential eligibility and reimbursement concerns upon completion of the PA project." The letter included the current design plans for the Penfield Pavilion.

The Grantee later provided a revised scope change request on June 30, 2016, which superseded the previous request dated April 29, 2016. The scope change request called for repairing the Pavilion rather than replacing it, citing cost savings as a motive for the change. The Grantee provided a letter from the NFIP/CRS Coordinator from the Town that stated that the requested, revised scope complied with the requirements of the NFIP and met the guidance provided in FEMA Technical Bulletin #5. In that letter, the NFIP/CRS Coordinator stated that the "lowest horizontal structural member will be at or

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1 Letter from Dana Conover, Public Assistance Coordinator, State of Connecticut to Paul F. Ford, Acting Regional Administrator, FEMA Region 1 re: Revision to Change in Scope of Work request: The Town of Fairfield DR-4087-CT PW-680 (Penfield Pavilion) (Apr. 29, 2016).
2 Letter to Richard Nicklas, Floodplain Management and Insurance Branch Chief, FEMA Region 1 from Dana Conover, Public Assistance Coordinator, CTDEPP/DEMHS and Diane Ifkovic, State NFIP Coordinator, CTDEEP re: NFIP Technical Review Request – Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, Connecticut (June 1, 2016).
3 Id. at 2.
4 Id.
5 Letter from Dana Conover, Public Assistance Coordinator, State of Connecticut to Paul F. Ford, Acting Regional Administrator, FEMA Region 1 re: Revision to Change in Scope of Work request: The Town of Fairfield DR-4087-CT PW-680 (Penfield Pavilion) (June 30, 2016).
6 Letter from James R. Wendt, AICP, Assistant Planning Director, NFIP/CRS Coordinator, Town of Fairfield, to Dana Conover, Public Assistance Coordinator, Connecticut Division of Emergency Management & Homeland Security re: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT (June 28, 2016).
above the base flood elevation with the required open pier foundation to allow the passage of flood waters” and there is a “breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction.” This proposed scope was subject to a public hearing and “was approved by the Town Plan and Zoning Commission on June 9, 2015.”

FEMA responded to the Grantee’s and CTDEEP’s request for technical assistance in a letter dated August 9, 2016. In the letter, FEMA explained that there were concerns that the scope of work being pursued by the Town may not comply with the Fairfield Zoning Regulations and 44 C.F.R. § 9.11(d), which incorporate the NFIP requirements. FEMA, in light of these and other issues, placed a financial hold on Project Worksheet #680 and informed the Grantee and Town that it would be issuing a formal request for information ("RFI") to obtain more information before making any final determinations. FEMA made very clear to the Town that continuing work on the Penfield Pavilion without waiting for FEMA approval might result in the total de-obligation of project funds. The Town, notwithstanding this warning, moved forward to complete construction.

FEMA sent a RFI to the Town and Grantee on or about September 30, 2016. In the RFI, FEMA identified and requested information pertaining to various issues. One of these issues was whether the Town’s proposed design complied with the minimum requirements of 44 C.F.R. § 60.3(e) and, by necessary implication, the Fairfield Zoning Regulations and 44 C.F.R. § 9.11(d). The Town responded to the RFI in a letter dated October 28, 2016, that the Grantee forwarded to FEMA along with its own letter on that same date. The Town asserted that its change of scope request comported with the minimum floodplain management requirements of the NFIP and provided several documents supporting its position. This included the building plans for the Penfield Pavilion and a letter from a professional engineer which stated that the plans for the Pavilion project conformed to the NFIP, Town of Fairfield Zoning Regulations, the State

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II. DISCUSSION

A. Overview of Applicable Regulation and Implementing Guidance

The Town is a participating community in the NFIP and has adopted Zoning Regulations that meet the minimum requirements of 44 C.F.R. pt. 60. The NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, repair of substantially damaged buildings, and substantial improvement of existing buildings in special flood hazard areas. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the Flood Insurance Rate Map ("FIRM"), and identified the coastal high hazard areas on the FIRM. The current FIRM for the Town of Fairfield establishes that the Penfield Pavilion is in the VE Zone, which is the coastal high hazard area.

The Fairfield Zoning Regulations, in turn, require that buildings and structures in flood prone areas as delineated on a FIRM "shall conform" to the standards set forth in Section 32 (entitled "Flood Protection") and incorporate the requirements of 44 C.F.R. § 60.3 at Section 32.5 of the Fairfield Zoning Regulations. The primary requirement implicated by the Penfield Pavilion project is 44 C.F.R. § 60.3(e)(5), which provides, in relevant part, that "substantial improvements" within the VE Zone on the community's FIRM must:

[H]ave the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system.

For the requirements of 44 C.F.R. § 60.3(e)(5) to apply, there must be a "substantial improvement" of a structure. The regulation at 44 C.F.R. § 59.1 defines "substantial improvement" as "any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the ‘start of construction’ of the improvement. ...” Based on

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13 44 C.F.R. § 60.3(e)(5).
the information available, FEMA has concluded that the restoration of the Pavilion was a substantial improvement, triggering the requirements of 44 C.F.R. § 60.3(e)(5).  

FEMA has promulgated Technical Bulletin 5 to provide specific guidance concerning the free-of-obstruction requirements in V Zones under 44 C.F.R. § 60.3(e) as well as the general requirement for construction that will minimize flood damage potential as it applies to V Zone construction. Technical Bulletin 5 explains that the NFIP requires that all new and substantially improved structures in V Zones be elevated to or above the base flood elevation ("BFE"), on open foundations (pilings, columns, or piers, and, sometimes, shear walls) that allow floodwaters and waves to pass beneath the elevated structures. The NFIP further requires that the "area beneath these elevated structures remain free of any obstructions that would prevent the free flow of coastal floodwaters and waves during a base flood event." FEMA has instituted these requirements under the NFIP to "minimize the transfer of flood forces to the building foundation and to preclude the deflection or redirection of flood forces that could damage the elevated building or neighboring buildings."

Technical Bulletin 5 provides specific guidance regarding various common building elements that may significantly affect the free passage of flood flow and waves under elevated buildings, several of which are directly at issue in the Penfield Pavilion. First, it states that grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP. However, grade beams placed above natural grade and below the BFE are prohibited obstructions under both 44 C.F.R. § 60.3(e)(5) and Technical Bulletin 5. This is because, among other things, the beams would be subject to hydrodynamic forces from wave action that would increase the horizontal load on a structure’s foundations and would also potentially cause debris and water to shoot up and impact the bottom of the structure.

Second, although obstructions such as fill are generally prohibited, Technical Bulletin 5 states that minor grading and the placement of minor quantities of fill are allowed, but only for landscaping, drainage under and around buildings, and support of parking slabs, pool decks, patios, walkways, and similar site elements. It is "generally

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14 FEMA’s original estimate to repair the Pavilion as detailed in Part A of the Cost Estimating Format was $2,090,442.85 (which excluded costs of contingencies and other factors) and the most recent appraised value of the pavilion in 2015 was $1,781,900. This means that the cost to repair the pavilion appears to be well beyond 50% of the market value of the structure. The Applicant stated in response to the RFI that it did not conduct its own substantial improvement calculation. See Letter from Michael C. Tetreau, supra note 9, Appendix A.


16 Id. at 1.

17 Id.

18 Id.

19 Id. at 13.

unreasonable” to expect that the addition of 1 to 2 feet of site-compatible, nonstructural fill in a V zone would “lead to adverse effects” on buildings, so that the placement of up to 2 feet of fill under or around an elevated building can be assumed to be acceptable. In the case where additional fill height is proposed for a site, Technical Bulletin 5 states that the proposed final grade should be compared to local topography. If the proposed final fill configuration is similar to grades and slopes in the immediate vicinity, a detailed analysis of the effects on flood flow and waves need not be required. If more than 2 feet of fill is proposed and the proposed fill configuration exceeds local grade heights and variations, an analysis must be performed.

B. The Use of Major Quantities of Fill Has Created Impermissible Obstructions Below the Lowest Floor of the Pavilion in Violation of 44 C.F.R. § 60.3(e)(5)

The first issue presented is whether the amount of fill used by the Town exceeded those “minor quantities” of nonstructural fill allowed in VE Zone so as to create an impermissible obstruction. In making this determination for the Penfield Pavilion, the central issue is establishing the elevation of the existing grade before Hurricane Sandy. This is because FEMA will allow the Town to first restore material lost by wave action during a storm and, after that material is replaced to pre-disaster levels, will then evaluate whether the additional fill placed on the site is a minor quantity of nonstructural fill or, alternatively, a major quantity of fill that creates a prohibited obstruction in violation of 44 C.F.R. § 60.3(e)(5) and Technical Bulletin 5.

The Town provided the following response to questions posed by FEMA in the RFI concerning the natural grade elevation of the project site and the basis/source for determining the natural grade elevation of the project site:

“The natural grade of the site is the dune topography that once existed between Long Island Sound and Fairfield Beach Road before the site was first built on in the early 1900s, then disturbed by demolition and new construction in the 2000s, and finally scoured by Hurricanes Irene and Sandy in 2011 and 2012.

The dune crest elevation varies from el. 10.0’ to 12.0’ NAVD across the Town-owned property, which stretches from Rickard’s Beach to the Durrell Pavilion. The building straddles the dune. The average grade around the perimeter of the building is 11.0’ NAVD, and under the building it is 10.8’ NAVD. Under the West Wing of the building, concrete grade beams were used, driven by the logistics of moving the building onto the new foundation.

The top of the grade beams are set at elevation 10.7’ NAVD, which is at or below the reestablished natural grade. At no point is any grade beam above grade.
Site transects taken to the east and west of the subject building were used to reestablish the natural topography under and around the building.\textsuperscript{21}

This information, however, did not cite to any specific source of data to establish the pre-existing natural grade of the unimproved dune before Hurricane Sandy. Without this data, it is unclear how taking site transects to the east and west of the Pavilion would reestablish the natural topography of the project site if the Town had no source data upon which to rely. As such, the Town has not provided sufficient data to support its own conclusion of the pre-disaster natural grade elevation.

I have concluded that the most recent and credible data available to determine the pre-existing natural grade of the site before Hurricane Sandy was LiDAR data from 2006 and, based on this data, have concluded that the pre-existing natural grade of the project site was 8.0' NAVD. Enclosure 1 to this letter depicts the contour lines of the elevations in and around the site of the pavilion using this 2006 data.\textsuperscript{22} As it relates to the amount of fill placed on the site, the design plans in Enclosure 2\textsuperscript{23} show that the Town used up to 2.5 feet of fill to bring the project site back to its pre-disaster natural grade of 8' NAVD, but then used approximately 3-4 feet of fill to bring the site up to the increased elevation of 11.0-12.0' NAVD to complete the project.

FEMA generally considers the placement of up to 2 feet of fill under or around an elevated building to be acceptable; however, in this case, the Town has used up to 4 feet of fill beyond the natural grade when restoring the pavilion. In the case where over 2 feet of fill height is used for a site, the proposed final grade must be compared to local topography. FEMA has compared the 2006 LiDAR data with the Penfield Pavilion depicted in the design plans (Enclosure 2) and concluded that the final fill configuration is not similar to grades and slopes in the immediate vicinity of the Pavilion.\textsuperscript{24} The Town, furthermore, did not provide any analysis as to whether the fill would not divert water to adjacent properties and would not cause damage to the underside of the Pavilion during flood events. Therefore, FEMA has concluded that the Town’s placement of up to 4 additional feet of fill to reach an elevation of 11.0-12.0' NAVD exceeds that permissible under 44 C.F.R. § 60.3(e)(5) and Technical Bulletin 5 and has created a prohibited obstruction. Such an obstruction was also created through the placement of the retaining walls above the natural grade and below the BFE.\textsuperscript{25}

\textsuperscript{21} Letter from Michael C. Tetreau, supra note 9, at Appendix A; see also Letter from Kevin H. Chamberlain, P.E., DeStefano & Chamberlain Inc. to Joseph Michelangelo, P.E., Director of Public Works, Town of Fairfield re: Restoration of Penfield Pavilion – 323 Fairfield Beach Road, Fairfield, CT FEMA-4087-DR-Town of Fairfield-PA-ID 001-26620-00 / PW 680, at 1 (Oct. 25, 2016) (which is included as Exhibit 2 to the Letter from Michael C. Tetreau).
\textsuperscript{22} See FEMA, Penfield Pavilion – Fairfield CT (Enclosure 1).
\textsuperscript{23} DeStefano & Chamberlain, Inc., Penfield Pavilion, Site Sections, SP400 (June 21, 2016) (Enclosure 2).
\textsuperscript{24} See FEMA, Penfield Pavilion – Fairfield CT (Enclosure 3) (note: this is an expanded view from Enclosure 1).
\textsuperscript{25} See Picture of the Penfield Pavilion (Enclosure 4) (which shows both retaining walls).
C. The Placement of a Grade Beam Above the Natural Grade Has Created an Impermissible Obstruction Below the Lowest Floor of the Pavilion in Violation of 44 C.F.R. § 60.3(e)(5)

The second issue presented is whether the Town has created an impermissible obstruction by placing the horizontal grade beam above the natural grade and below the BFE. FEMA has determined that the pre-existing natural grade of the site before Hurricane Sandy was 8.0' NAVD and that the BFE of the site is 13.0' NAVD. The design plans show that the Town has placed the grade beam at an elevation of 10.7' NAVD, which is above the pre-disaster natural grade and below the BFE. As grade beams used to tie together foundation piles or columns to provide additional lateral support are considered obstructions if placed with their upper surfaces above the natural grade and below the BFE, the Town has created a prohibited obstruction pursuant to 44 C.F.R. § 60.3(e)(5) and Technical Bulletin 5.

III. CONCLUSION

I have concluded that the pre-existing natural grade of the project site before Hurricane Sandy was 8.0' NAVD and the BFE is 13.0' NAVD. Based on this conclusion, a review of the pavilion design plans, and a site inspection, I have determined that the Town has violated the minimum floodplain management criteria under 44 C.F.R. § 60.3(e)(5) and Technical Bulletin 5 by creating impermissible obstructions. These obstructions included the installation of major quantities of fill under and around the pavilion; constructing new retaining walls that create an obstruction; and constructing the foundation of the pavilion with a horizontal grade beam above the natural grade and below the BFE.

Before moving forward with any potential enforcement action under the NFIP concerning this project, I am providing the Town and Grantee with 60 days to provide any additional information in regards to these determinations, which may include more current and credible data to establish the natural grade before Hurricane Sandy; an analysis as to whether the major quantities of fill would not divert water to adjacent properties and would not cause damage to the underside of the Pavilion structure during flood events; and/or corrective actions that the Town will take to address the violations. I am available during these 60 days for any discussions that the Applicant, Grantee, and CTDEEP may wish to have.

In addition to making my determination following the expiration of the 60 days for the purposes of the NFIP, the Disaster Recovery Manager will be moving forward with a Public Assistance determination for Project Worksheet #680. I note that, in addition to the potential violations of 44 C.F.R. § 60.3 and Technical Bulletin 5, there could be other potential impediments to the eligibility of this project. For example, the Town did not

26 See 44 C.F.R. § 59.24.
obtain prior FEMA approval for pursuing a change in the scope of work, did not obtain the necessary FEMA environmental and historic preservation review before moving forward with the change, and has not yet received a consistency determination from CTDEEP.

Sincerely,

Richard Nicklas
Branch Chief
Floodplain Management and Insurance
FEMA Region I

cc: Michael C. Tetreau, First Selectman, Town of Fairfield, Office of the First Selectman, 725 Old Post Road, Fairfield, Connecticut 06824  mtetreau@town.fairfield.ct.us

Enclosures
(1) FEMA, Penfield Pavilion – Fairfield CT
(2) DeStefano & Chamberlain, Inc., Penfield Pavilion, Site Sections, SP400 (June 21, 2016)
(3) FEMA, Penfield Pavilion – Fairfield CT
(4) Picture of the Restored Penfield Pavilion
December 12, 2017

Richard Nicklas
Branch Chief, Floodplain Management and Insurance
FEMA Region I
99 High Street
Boston, MA 02110

Re: FEMA-4087 –DR – Town of Fairfield – PA-ID 001-26620-00- Project Worksheet 680

Dear Mr. Nicklas:

Thank you for your letter dated 10/17/17. In response, the purpose of this letter and attachments is to provide information to demonstrate compliance with the floodplain management criteria associated with the Town of Fairfield restorative work at the Penfield Pavilion.

The information included in this transmittal is as follows:

A. An engineering report by DeStefano-Chamberlain, Design Engineers for the restored Penfield Pavilion, dated 12/1/17.
B. An engineering report by RACE, an engineering firm with expertise along the Connecticut Shoreline, dated 12/1/12
C. Background - A description of the geomorphic characteristics of the area.
D. History of the buildings on the property.
E. A series of captioned historical photos of the buildings and grades over the last 100 years, #1 - 25
F. A series of USGS Quadrangle Maps form 1920-2016 which illustrate the general land formation, #1 - 6
G. The following historical mapping:
   1. Town of Fairfield Topographic Maps, Sheet 3, 1935, 1"=200'
   2. Town of Fairfield Topographic Maps, Sheets C-18 and C-19, April 12, 1968, 1" = 100'
   3. Town of Fairfield, April 2004 LiDar, 0.5’ contour intervals, 1"=50’
   4. April 2006 LiDar, superimposed on 2016 aerial photograph, 0.5’ contour intervals, 1”=20’
   5. Town of Fairfield Existing Condition Survey, April 2015, 1.0’ contour intervals, 1”=40’
   6. As-Built Improvement Location Survey, Geskck & Associates, P.C., 12/21/16, 1.0’ contour intervals, 1” = 30’

Respectfully,

Michael C. Tetreau
First Selectman

Cc: Diane Ifkovic, CT DEEP (w/attachments)
    Dana Conover, CT DEMHS (w/attachments)
C. Background

The Penfield Pavilion property is located on a typical barrier beach formation along Long Island Sound. In pre-colonial times, the land behind (north) the barrier beach was a salt water marsh which was connected to the Sound by Ash Creek to the east and Pine Creek to the west. During diurnal high tides, the two inlets would connect to form one large inundated salt water marsh behind the barrier beach. This marsh area was located in the land which is now roughly bordered by the quadrant of Fairfield Beach Road, Beach Road, Old Post Road, and Reef Road. The barrier beach strip along Long Island Sound was the highest elevation in this area.

In colonial times, the marsh area was gradually filled and became the location for the original agrarian use of the Fairfield, and these “fair fields” were the origin of the naming of the Town. This land is now fully residentially developed, and the elevation of the land varies from approximately elevation 6 to 12. This is below the 100 year base flood elevation, and most of the land sits lower than the barrier beach.

Although barrier beach land formations want to progress landward over time, the construction of buildings on the barrier beach and the roadway behind it has stopped this natural progression.
D. **History of Buildings on the Property**

- A private beach club building, Penfield Bathing Pavilion was constructed on the property in 1919 by Joseph Flint.

- Subsequent additions were constructed between 1920 and 1931. Town aerial photos dated 1935 shows a large and fully completed beach club.

- The property changed hands in 1959 and was reopened once again in 1960 as a private beach club renamed Sun Haven Beach Club.

- The Town of Fairfield purchased the property in April of 1976.

- The Town constructed a new small pavilion (Durrell Pavilion) on the west side of the property between 1984 and 1985; a Certificate of Occupancy was issued in May of 1985.

- The Town demolished the original building and constructed a new Penfield Pavilion in two phases, beginning in 2007 and completed in 2011.

- Penfield Pavilion was damaged during Super Storm Sandy on 10/29/12 and was not able to be occupied or operational due to the damages.

- The rebuilding of the Penfield Pavilion began on 2/29/16, and was completed in January 2017.
November 28, 2018

Diane Ifkovic  
National Flood Insurance Program Coordinator  
Connecticut Department of Energy and Environmental Protection  
79 Elm Street  
Hartford, CT 06106-5127

Michael C. Tetreau  
First Selectman  
Town of Fairfield  
725 Old Post Road  
Fairfield, CT 06824

Re:  Town of Fairfield – Noncompliance with the Minimum Floodplain Management Criteria at 44 C.F.R. § 60.3 – Penfield Pavilion

Dear Mr. Tetreau and Ms. Ifkovic:

The purpose of this letter is to provide you with the Federal Emergency Management Agency’s (“FEMA”) final decision concerning whether the Penfield Pavilion complies with the National Flood Insurance Program (“NFIP”) floodplain management regulations set forth in 44 C.F.R. pt. 60 and adopted by the Town of Fairfield (“Town”). In a letter dated October 17, 2017, FEMA informed both the Town and the State of Connecticut that the Penfield Pavilion did not appear to comply with the minimum floodplain management regulations and provided the Town with 60 days to provide any additional information. The Town, in turn, conducted a teleconference with FEMA staff and later provided FEMA with various documentation.

Upon review of the additional information and as detailed in the enclosed analysis, I have determined that the Town has not demonstrated that the Penfield Pavilion complies with the floodplain management regulations. Specifically, the Town placed horizontal grade beams for the Penfield Pavilion above the natural grade and below the base flood elevation in violation of 44 C.F.R. § 60.3(e)(5).

A community, to qualify for the sale of flood insurance under the NFIP, must adopt and adequately enforce floodplain management regulations that meet the requirements of 44 C.F.R. § 60.3. When FEMA identifies a failure of a community to enforce these minimum requirements, it communicates this violation to the community and expects the community to pursue actions to resolve or remedy violations to the maximum extent possible. The failure to take such corrective actions may result in the formal enforcement actions of probation, suspension, Community Rating System (“CRS”) retrogrades, or other actions as deemed appropriate.
The corrective action to address the violation would be the movement of the horizontal grade beams below natural grade or above the base flood elevation, which would require structural modifications to the foundation of the Pavilion. As the Town has already completed construction, such a corrective action is likely not feasible. FEMA, notwithstanding, will be contacting Town of Fairfield officials to discuss potential remedial actions to address the violation and potential enforcement actions.

Sincerely,

[Signature]

Richard Nicklas
Branch Chief
Floodplain Management and Insurance
FEMA Region I
I. BACKGROUND

The Town of Fairfield ("Town") owns and operates the Penfield Pavilion, which is a single story, wood/steel frame structure located in the VE Zone\(^1\) within the special flood hazard area ("SFHA")\(^2\) at Penfield Beach in Fairfield, CT. The heavy storm surge during Hurricane Sandy from October 27 to November 8, 2012, damaged the Penfield Pavilion and the Town applied through the Connecticut Department of Emergency Services and Public Protection ("DESPP") under the Public Assistance Grant Program for major disaster declaration FEMA-4087-DR for financial assistance to restore this damage. After receiving the application, the Federal Emergency Management Agency ("FEMA") prepared Project Worksheet #680 to set forth the disaster damage, scope of work to restore this damage, and estimated costs for this work. FEMA awarded Project Worksheet ("PW") #680 on December 17, 2015, with total net estimated project cost of $4,340,054.11.

The final approved scope of work in PW #680 was the replacement of the Penfield Pavilion. As detailed in the project description, the "new pavilion will be built in the existing footprint and elevated per Codes and Standards compliance. The new foundation system will be raised so the lowest horizontal member will be 2.5 feet above the Base Flood Elevation of 13 to an elevation of 15.5 feet."\(^3\) The project description made no provision for the placement of any horizontal members below the base flood elevation and also made clear that the "site will be returned to its original design, function, and capacity within the original footprint, meeting all appropriate codes and standards..."\(^4\) As it related to changing the scope, the project stated that if the applicant "wishes to alter the approved scope of work, they must first formally request approval for changes to the approved scope of work from FEMA, through the DESPP, prior to beginning construction."\(^5\)

Following the award, DESPP later requested a change in the scope of work in April 2016 that involved repair instead of replacement, a scope of work already commenced by the Town without prior FEMA approval.\(^6\) DESPP later informed FEMA during a phone call on May 12, 2016, that there would be changes and additions to the scope change and asked for FEMA to put the scope change request on hold until it provided additional information. Before submitting the final scope change request, DESPP and the Connecticut Department of Energy and Environmental Protection ("DEEP") transmitted a joint letter to the Regional Office concerning Project Worksheet #680 on June 1, 2016, that requested technical assistance under the National...

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1 A VE Zone is an area of special flood hazards, with water surface elevations determined and with velocity, that is inundated by tidal floods (coastal high hazard area). 44 C.F.R. § 64.3(a)(1).
2 A special flood hazard area ("SFHA") is the land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year. 44 C.F.R. § 59.1.
3 PA-01-CT-4087-PW-00680(0) (Dec. 17, 2015) ("PW #680").
4 Id.
5 Id.
Flood Insurance Program ("NFIP").

In the technical assistance request letter, DESPP and DEEP explained that the Town decided to repair the Penfield Pavilion instead of replacing it, commencing construction on February 29, 2016, without an official, approved change to the original scope of work. DESPP and DEEP expressed concern that the revised scope of work may not comply with the minimum requirements of the NFIP, although the Town asserted that the building construction plans complied with NFIP requirements. Because of the disagreement, DESPP and DEEP requested that FEMA review the design plans for NFIP compliance "in order that the PA SOW be rewritten accurately so that there are no reimbursement issues upon project completion." The stated goal of this review was to "assure all parties of the compliance with NFIP regulations and to avoid any potential eligibility and reimbursement concerns upon completion of the PA project." The letter included the current design plans for the Penfield Pavilion.

DESPP later provided a revised scope change request on June 30, 2016, which superseded the previous request dated April 29, 2016. The scope change request called for repairing the pavilion rather than replacing it, citing cost savings as a motive for the change. DESPP provided a letter from the NFIP/CRS Coordinator from the Town that stated that the revised scope complied with the requirements of the NFIP and met the guidance provided in FEMA Technical Bulletin #5. The NFIP/CRS Coordinator stated that the "lowest horizontal structural member will be at or above the base flood elevation with the required open pier foundation to allow the passage of flood waters" and there is a "breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction." This proposed scope was subject to a public hearing and "was approved by the Town Plan and Zoning Commission on June 9, 2015."

FEMA responded to DESPP's and DEEP's request for technical assistance in a letter dated August 9, 2016. In the letter, FEMA explained that there were concerns that the scope of work being pursued by the Town may not comply with the Fairfield Zoning Regulations, 44 C.F.R. §

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8 Id. at 2.
9 Id.
11 Letter from James R. Wendt, AICP, Assistant Planning Director, NFIP/CRS Coordinator, Town of Fairfield, to Dana Conover, Public Assistance Coordinator, Connecticut Department of Emergency Services and Public Protection re: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT (June 28, 2016).
60.3, and 44 C.F.R. § 9.11(d). FEMA, in light of these and other issues, placed a financial hold on PW #680 and informed DESPP and the Town that it would be issuing a formal request for information ("RFI") to obtain more information before making any final determinations. FEMA made clear to the Town that continuing work on the Penfield Pavilion without waiting for FEMA approval might compromise the eligibility of the entire project. The Town, notwithstanding this warning, moved forward to complete construction.

FEMA sent a RFI to the Town and DESPP on or about September 30, 2016, that identified and requested information pertaining to various issues. One of these issues was whether the Town’s proposed design complied with the minimum requirements of 44 C.F.R. § 60.3(e), the Fairfield Zoning Regulations, and 44 C.F.R. § 9.11(d). The RFI explained that there were three primary concerns, which were: (1) whether the horizontal grade beams were located above the natural grade and below the base flood elevation and, if so, whether they comprised a violation of 44 C.F.R. § 60.3(e)(4) or an impermissible obstruction in violation of 44 C.F.R. § 60.3(e)(5); (2) whether the large quantities of fill installed by the Town comprised an impermissible obstruction in violation of 44 C.F.R. § 60.3(e)(5) and whether that fill was used for structural support in violation of 44 C.F.R. § 60.3(e)(6); and (3) whether the placement of a retaining wall above the natural grade and below the base flood elevation comprised an impermissible obstruction in violation of 44 C.F.R. § 60.3(e)(5).

The Town responded to the RFI in a letter dated October 28, 2016, that DESPP forwarded to FEMA along with its own letter on that same date. The Town asserted that the Penfield Pavilion comport with the minimum floodplain management requirements of the NFIP and provided several documents supporting its position. This included the building plans for the Pavilion and a letter from a professional engineer which stated that the plans for the Pavilion project conformed to the NFIP, Town of Fairfield Zoning Regulations, the State of Connecticut Building Code, and the standard ASCE 24 Flood Resistant Design and Construction.

After reviewing the information provided, FEMA issued a response to the request for technical assistance concerning whether the unapproved scope of work completed by the Town to restore Penfield Pavilion complied with the minimum floodplain management criteria set forth in 44 C.F.R. pt. 60. This letter, issued on October 17, 2017, explained that the Town did not

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13 Id. at 6 ("The Grantee and Applicant should also carefully consider whether the Applicant should continue performing its construction of the pavilion, as such work could compromise future eligibility.").
18 Letter from Richard Nicklas, Branch Chief, Floodplain Management and Insurance, FEMA Region I to Dana Conover, Public Assistance Coordinator, Connecticut Department of Emergency Services & Public Protection and
demonstrate compliance with the minimum floodplain management criteria. FEMA—before moving forward to take an enforcement action under the NFIP—provided the Town with an opportunity to provide additional information. The Town provided additional information via a letter dated December 12, 2017, that included a series of historical photographs of the buildings at the site over the past 100 years; U.S. Geological Survey ("USGS") quadrangle maps from 1920-2012 to illustrate the general land formation; other historic mapping products; an engineering report prepared by DeStefano-Chamberlain; and an engineering report prepared by Race Coastal Engineering. Before the submission of this information, FEMA, DESPP, and the Town conducted a teleconference on November 20, 2017, to discuss the information that was to be submitted.

II. DISCUSSION

A. Overview of Applicable Regulations and Implementing Guidance

A community, to qualify for the sale of flood insurance under the NFIP, must adopt and adequately enforce floodplain management regulations that meet or exceed the requirements of 44 C.F.R. Part 60. The overriding purpose of the floodplain management regulations is to ensure that participating communities take into account flood hazards, to the extent that they are known, in all official actions relating to land management and use. When FEMA discovers an instance where a community has failed to adequately enforce the minimum requirements, it will identify the violation to the community and often provide an opportunity to remedy the violations to the maximum extent possible within established deadlines.

The NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, substantially damaged buildings, and substantial improvement of existing buildings in a SFHA. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the Flood Insurance Rate Map ("FIRM"), and identified the coastal high hazard areas (V Zones) on the FIRM. The current FIRM for the Town of Fairfield designates a regulatory floodway and coastal high hazard areas, such that the requirements of 44 C.F.R. § 60.3(e) apply.

22 See FEMA F-776, Guidance for Conducting Community Assistance Contacts and Community Assistance Visits, at 7-1 to 6 (Apr. 2011); 44 C.F.R. § 59.24.
The Town is a participating community in the NFIP and has adopted the Fairfield Zoning Regulations that meet the minimum requirements of 44 C.F.R. pt. 60. The Fairfield Zoning Regulations, in turn, require that buildings and structures in flood prone areas as delineated on a FIRM “shall conform” to the standards set forth in Section 32 (entitled “Flood Protection”), which incorporate the requirements of 44 C.F.R. § 60.3 at Section 32.5.

One of the requirements in the regulation is 44 C.F.R. § 60.3(e)(5), which states that substantial improvements in the VE Zone must not have obstructions below the lowest floor:

[T]he community shall...provide that all new construction and substantial improvements within Zones...VE...on the community’s FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system.\(^24\)

For the requirements of 44 C.F.R. § 60.3(e)(5) to apply, there must be a “substantial improvement” of a structure. The regulation at 44 C.F.R. § 59.1 defines “substantial improvement” as “any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the ‘start of construction’ of the improvement. ...”\(^25\) This term includes a structure which has incurred “substantial damage,” regardless of the actual repair work performed.\(^26\) “Substantial damage” means “damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.”\(^27\)

FEMA has promulgated Technical Bulletin 5 to provide interpretive guidance concerning the structural fill and free-of-obstruction requirements in coastal high hazard areas (marked as V Zones on a FIRMs) under 44 C.F.R. § 60.3(e)(5) as well as the general requirement for construction that will minimize flood damage potential as it applies to V Zone construction.\(^28\) Technical Bulletin 5 explains that 44 C.F.R. § 60.3(e) requires that all new and substantially improved structures in V Zones be elevated to or above the base flood elevation (“BFE”) on open foundations (pilings, columns, or piers, and, sometimes, shear walls) that allow floodwaters and waves to pass beneath the elevated structures.\(^29\) It also explains that the regulation requires that the area beneath these elevated structures remain free of any obstructions that would prevent the free flow of coastal floodwaters and waves during a base flood event.\(^30\) FEMA has instituted these requirements under the NFIP to “minimize the transfer of flood forces to the building


\(^{24}\) 44 C.F.R. § 60.3(e)(5).

\(^{25}\) Id. § 59.1.

\(^{26}\) Id.

\(^{27}\) Id.


\(^{29}\) Id. at 1.

\(^{30}\) FEMA Technical Bulletin 5, supra note 28, p. 1; see also 44 C.F.R. § 60.3(e)(5).
foundation and to preclude the deflection or redirection of flood forces that could damage the elevated building or neighboring buildings.\textsuperscript{31}

Technical Bulletin 5 provides various guidance regarding common building elements that may significantly affect the free passage of flood flow and waves under elevated buildings, one of which are horizontal grade beams that are not part of the lowest floor. \textbf{First}, the Technical Bulletin makes no allowance for the placement of horizontal grade beams above the natural grade and below the BFE. This is because such a horizontal grade beam would constitute an impermissible obstruction under 44 C.F.R. § 60.3(e)(5).\textsuperscript{32} \textbf{Second}, the Technical Bulletin states that horizontal grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP.\textsuperscript{33} But Technical Bulletin 5 does not provide any exceptions that would allow the placement of a horizontal grade beam above the natural grade and below the BFE.

The “natural grade” of a location means the grade unaffected by construction techniques such as fill, landscaping, or berming.\textsuperscript{34} A FIRM promulgated by FEMA will delineate the SFHA and the BFEs for a community, but will not identify the natural grade of any particular location. As the FIRM does not identify the elevation of the natural grade, determining the natural grade for a specific location (such as the site of the Penfield Pavilion) requires the analysis of site specific topographical data, any available contour maps, light detection and ranging (“LiDAR”) data, field observations of surrounding topography, photographs, and other available data.

\textbf{B. The Placement of the Horizontal Grade Beams Above the Natural Grade and Below the Base Flood Elevation Violated 44 C.F.R. § 60.3(e)(5)}

The restoration of the Penfield Pavilion was a substantial improvement, as the repair cost exceeded 50% of the market value.\textsuperscript{35} Because it was a substantial improvement, the regulation at 44 C.F.R. § 60.3(e)(5) prohibits the creation of any obstruction below the BFE in the VE Zone. In this case, the Town placed horizontal grade beams (with their top elevation) at 10.7' NAVD 1988 when constructing the foundation of the Penfield Pavilion. The three issues, accordingly, are: (1) determining whether the project site is in the VE Zone; (2) if in the VE Zone, determining the elevation of the site’s natural grade in order to evaluate whether the horizontal grade beams’ elevation of 10.7’ NAVD 1988 is below the natural grade; and (3) determining

\textsuperscript{31} Id.

\textsuperscript{32} See FEMA Technical Bulletin 10, \textit{Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe from Flooding}, at 3 (May 2001) (“Buildings constructed in a V zone must be constructed on an open foundation consisting of piles, piers, or posts and must be elevated so that the bottom of the lowest structural members is at or above BFE.”) (emphasis added).

\textsuperscript{33} Id. at 13 (“Grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP.”).


\textsuperscript{35} FEMA’s original estimate to repair the pavilion as detailed in Part A of the Cost Estimating Format for the Public Assistance project was $2,090,442.85 (which excluded costs of contingencies and other factors) and the appraised value of the Penfield Pavilion in 2015 was $1,781,900. See Cost Estimating Format, Town of Fairfield, CT - Penfield Pavilion (July 14, 2015); Vision Government Solutions, Appraisal of 323 Fairfield Beach Road (Oct. 5, 2018). This means that the original FEMA estimate of the cost to repair the pavilion exceeded 50% of the market value of the structure, making this structure substantially damaged. A substantial improvement includes any substantially damaged structure.
whether the horizontal grade beams comprise an impermissible obstruction under 44 C.F.R. § 60.3(e)(5).

**Natural Grade and Base Flood Elevation**

FEMA has concluded, based on the most recent FIRM, that the BFE at the project site is 13.0’ NAVD 1988 and that the project site is in the VE Zone. FEMAs has also examined the LiDAR data from 2006 and the photographs, engineering reports, and mapping products provided by the Town and concluded that the pre-existing natural grade of the project site ranged from 8.0’ to 9.0’ NAVD 1988 as depicted in Enclosure 2. Because the elevation of the top of the horizontal grade beams are 10.7’ NAVD 1988, this means that the horizontal grade beams are above the natural grade and below the BFE and in violation of 44 C.F.R. § 60.3(e)(5).

The Town has made a number of statements and provided various documentation to attempt to demonstrate that the average natural grade of the Penfield Pavilion site is 11.0’ NAVD 1988 and under the building is 10.8’ NAVD 1988, such that the grade beam at 10.7’ NAVD would be below natural grade. When originally asked to explain its basis/source of the natural grade assertion, the Town stated in its October 28, 2016, letter that the “natural grade is the dune topography that once existed between Long Island Sound and Fairfield Beach Road before the site was first built on in the early 1900s, then disturbed by demolition and new construction in the 2000s, and finally scoured by Hurricanes Irene and Sandy in 2011 and 2012.” The Town, to reestablish the natural topography under and around the building, then “took site transects taken to the east and west of the subject building.” During a November 2017 teleconference with FEMA, the Town explained that it believed the knolls to the right and to the left of the Pavilion were, at one point, a continuous land formation before being disturbed by development and that connecting corresponding elevation points of the two transects created an elevation model representative of the natural grade.

The Town also provided an engineering report prepared by DeStefano & Chamberlain in December 2017 that “disagreed [with FEMA] on the site grades” and stated that they could demonstrate the “as-constructed project grades are consistent with surrounding topography.” In making such demonstration, the report first stated that it was including a 0.5 interval contour map plotted by the Town of Fairfield Engineering Department in NAVD datum using the same 2006 LiDAR data used by FEMA, as the 2’ contour interval map created by FEMA was not “detailed enough.” This Town-generated map, however, shows most of the Pavilion at between

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37 Federal Emergency Management Agency, Penfield Pavilion – Fairfield CT (Enclosure 2) (depicting what FEMA has determined are the contour lines of the elevations in and around the site).
39 Id.
8' and 9' NAVD 1988, which is the elevation being asserted by FEMA.

The report then stated that it had included historical photographs of the site that:

[S]how a continuous dune along the length of the site with the former building at the crest. From both the 2006 LiDAR data and the 2017 as-built survey, the dune crest elevation at the two ends of the building can be seen as 10.0' and 11.0' NAVD. Based on the photographs, the LiDAR data and the as-built survey, it is our opinion that it is reasonable and logical to infer that this crest elevation would have continued across the entire length of the site in the property's "natural" state. 

FEMA finds these arguments and documentation unpersuasive. Several of the maps and photographs provided by the Town identify two knolls—one to the left and one to the right back (landward side) of the Pavilion—with elevations higher than those within the footprint of the Pavilion. None of this documentation, however, shows these two knolls ever being connected as a continuous dune. Even assuming, arguendo, that they did show that the two knolls were once connected as a continuous dune, that elevation would not cover the front (seaward) side of the pavilion, such that the elevation of the front of the Pavilion would still be between 8' and 9' NAVD 1988 before the restorative work took place.

In addition to the engineering report prepared by DeStefano & Chamberlain, the Town also provided historical photographs, USGS quadrangle maps, and other mapping products in order attempt to demonstrate that the elevation of the site of the Penfield Pavilion is 11.0' NAVD 1988 and under the building is 10.8' NAVD 1988. FEMA has reviewed these individual items and concluded that none of them demonstrate a natural grade higher than the 8' to 9' NAVD 1988 as established by the 2006 LiDAR information. In fact, most of the mapping products provided by the Town depict an elevation of between 8' and 9' NAVD 1988 over the past 83 years. The following provide a brief summary of FEMA's analysis concerning this information that is further detailed in Enclosure 1:

- **Historical Photographs.** The historical photographs provided do not demonstrate a natural grade higher than 8-9 feet NAVD 1988. In all cases but one, the photographs contain no elevation markings in order to enable FEMA to determine the natural grade of the site. There was one photograph that appeared to contain an elevation marking on the original Penfield Pavilion of 11.0' NGVD 1929. The sand built-up at the location appears to be approximately 0.75 foot below this marking, placing the sand at an elevation of 10.25' NGVD 1929. When converting this to NAVD 1988, the elevation of the sand would be 9.16' NAVD 1988. This means that the only photograph with an elevation marking—if FEMA accepted the elevation marking as being accurate and the location of the sand in that photograph as representative of natural grade—actually supports FEMA's conclusion that the elevation of the horizontal grade beam (10.7' NAVD 1988) is above the natural grade.

- **USGS Quadrangle Maps.** First, the Town provided a USGS quadrangle map from 1920 that only had 20' contour lines (based on mean sea level datum) that showed no contour

41 Id. at 2.
lines in the area of the Penfield Pavilion, such that it provides no useful data. Second, the Town provided USGS quadrangle maps from 1951, 1960, 1970, and 1984 that had 10' contour lines and generally showed the Pavilion on a 10' contour line. That being said, the datum for these maps was NGVD 1929 or mean seal level and—when converted to NAVD 1988 datum—means the natural grade at the site of the pavilion would be 8.91' NAVD 1988. Third, the Town also provided a USGS quadrangle map from 2012 that used the NAVD 1988 datum and showed the Pavilion to be at an elevation of 10'. However, the USGS did not change the contour lines for this 2012 map from the previous 1984 map based on the update to the new datum. This means the elevation of the site in 2012 remained 8.91' NAVD 1988. As such, the USGS quadrangle maps from 1951, 1960, 1970, 1984, and 2012 all support FEMA's conclusion that the elevation of the horizontal grade beam (10.7' NAVD 1988) is above the natural grade.

- **Other Historical Mapping.** The Town provided a number of other maps dating from 1935 until 2017. As a general matter, most of these maps support a conclusion that the elevation of the natural grade is between 8' and 9' NAVD 1988. The other maps not supporting such a conclusion used a scale not useful for analysis or otherwise depicted the as-built conditions of the restored pavilion that are not useful for analysis because of the large volumes of fill used during the restorative work.

**Impermissible Obstruction – Violation of 44 C.F.R. § 60.3(e)(5)**

The regulation at 44 C.F.R. § 60.3(e)(5) prohibits the creation of any obstruction below the BFE for a substantial improvement in the VE Zone. Technical Bulletin 5, in clarifying the application of these prohibitions, states that horizontal grade beams placed with their upper surfaces flush with or below the natural grade are permissible. As detailed above, FEMA has concluded that there was a substantial improvement of the Pavilion, the elevation of the natural grade of the site is 8.0' to 9.0' NAVD 1988, the BFE of the site is 13.0' NAVD, and the site is in the VE Zone. The issue presented, accordingly, is whether the horizontal grade beams are above the natural grade and below the BFE. As set forth in the design plans and confirmed by the Town, the horizontal grade beams are at an elevation of 10.7' NAVD 1988. This means that the horizontal grade beams are above the natural grade and below the BFE, such that they comprise an impermissible obstruction under 44 C.F.R. § 60.3(e)(5).

The Town has provided two engineering reports to attempt to refute this conclusion, neither of which is persuasive. The first engineering report—prepared by DeStefano & Chamberlain and discussed earlier in this analysis—asserted that Technical Bulletin #5 can be read to allow a horizontal grade beam regardless of its elevation to be a permissible obstruction based on the theory that such a grade beam would eventually be exposed by scour whether embedded in fill above the natural grade or in existing soils below the natural grade. The report pointed to language in Technical Bulletin #5 recognizing that, even where horizontal grade beams are permisibly placed with their upper surfaces flush with or below the natural grade, storm erosion and local scour will often expose and undermine such grade beams, leaving them suspended above the post-storm ground profile.\(^{42}\) Technical Bulletin #5, in light of this potential scour or erosion, stated that "Designers must anticipate this circumstance and design grade beams to resist

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flood, wave, and debris loads and to remain in place and functional when undermined." This language, according to DeStefano & Chamberlain, can be read to allow a grade beam above the natural grade so long as it can withstand these loads and stated that they conducted structural calculations to verify that the horizontal grade beams can resist the horizontal and vertical loads presented during a 100-year flood in combination with hydrostatic pressure, wind, and gravity loads.

Technical Bulletin #5 does recognize that storm erosion and local scour can expose and undermine grade beams placed below the natural grade, leaving them suspended above the post-storm ground profile. But even though designers must anticipate this circumstance and design grade beams to handle loads when exposed, this language in no way authorizes the placement of a grade beam above the natural grade and below the BFE in the first place. Simply put—there is no exception in 44 C.F.R. § 60.3(e)(5) or Technical Bulletin #5 to have a horizontal grade beam above the natural grade and below the BFE, irrespective of any engineering analysis showing that the impermissible grade beam could handle the loads from a 100-year flood. Therefore, because all substantial improvements in the coastal high hazard area must have an open foundation below the BFE, the horizontal grade beams are impermissible obstructions.

The second engineering report, prepared by RACE Coastal Engineering, asserted that the horizontal grade beams do not comprise a “significant” obstruction and, as a result, do not violate 44 C.F.R. § 60.3(e)(5). In reaching this conclusion, it noted language in Technical Bulletin #5 that “it is not always clear whether a particular building element or site development practice will be a significant obstruction that prevents the free passage of floodwaters and waves. The term ‘significant’ is used here because any construction or development practice below the flood level will cause a localized disruption of flow and waves during the base flood.” RACE Coastal Engineering then conducted its own wave crest, runup, erosion, load, and reflection analysis; identified loads and scour depths for the pavilion based on this analysis; and concluded that the horizontal grade beams would not divert water to adjacent properties or cause damage to the underside of the Pavilion during flood events if it had been designed to be stable accounting for the loads and scour depths. As such, the grade beams “should not be considered [a] ‘significant obstruction[]’ and...consistent with the floodplain management criteria of 44 C.F.R. § 60.3(e)(5).”

FEMA disagrees. The regulation at 44 C.F.R. § 60.3(e)(5) prevents an obstruction below the BFE for a structure in the VE zone and a horizontal grade beam that is part of a building’s foundation comprises just such an obstruction. The language in Technical Bulletin #5 noted by RACE Coastal Engineering about an obstruction needing to be “significant” is clarifying that FEMA does not consider every building element—just because it happens to be below the BFE—to create the type of obstruction prohibited by the regulation. Technical Bulletin #5

43 Id.
44 Id. at 4.
45 Id. at 13.
48 Letter from Azure Dee Sleicher, supra note 46, at 3.
describes how some types of building elements (such as stairs, ramps, decks, patios, elevators, and foundation bracing) can be constructed below the BFE without comprising an obstruction if designed in a certain way. For example, a building elevated above the BFE may need access stairs below the BFE and such stairs can be constructed so as not to comprise a significant obstruction.

But as it relates to horizontal grade beams, Technical Bulletin #5 states that only grade beams placed with their upper surfaces flush with or below the natural grade are not considered obstructions and allowed. It makes no provision for potential ways to construct grade beams below the BFE and above natural grade so as to not comprise an obstruction. If FEMA had wanted to create such a possibility, then Technical Bulletin 5 would have been worded very differently, such as “Grade beams are allowed below the BFE and above natural grade if they are designed to resist flood, wave, and debris loads.” Technical Bulletin 5 makes no such allowance.

III. CONCLUSION

FEMA has determined that the Town has violated the minimum floodplain management criteria under 44 C.F.R. § 60.3(e)(5) by creating an impermissible obstruction through the construction of the foundation of the Pavilion with horizontal grade beams above the natural grade and below the BFE.
<table>
<thead>
<tr>
<th>No.</th>
<th>Document</th>
<th>Description</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Photograph 1</td>
<td>Original Penfield Pavilion sitting on peak of the barrier beach, looking from the southeast, from the first half of the 20th century</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>2</td>
<td>Photograph 2</td>
<td>Original Penfield Pavilion in the late 1970s after the Town of Fairfield acquired the property, looking west to east</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>3</td>
<td>Photograph 3</td>
<td>The original Penfield Pavilion circa 1970s</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>4</td>
<td>Photograph 4</td>
<td>The original Penfield Pavilion in the 1980s from the landward side</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>5</td>
<td>Photograph 5</td>
<td>The original Penfield Pavilion in the 1980s from the landward side (closer angle than Photograph 4)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>6</td>
<td>Photograph 6</td>
<td>The construction of the Durrell Pavilion in the 1980s that shows the Penfield Pavilion in the background</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
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<tr>
<td>7</td>
<td>Photograph 7</td>
<td>The Penfield Pavilion in the 2000s from the landward side</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
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<tr>
<td>8</td>
<td>Photograph 8</td>
<td>The Penfield Pavilion in the 2000s from the landward side (showing an area to the right of the structure that includes a knoll)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site. Further, the wooded knoll was identified on the 2006 LIDAR and considered as part of FEMA</td>
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<td>making its determination that 8&quot; to 9&quot; NAVD 1988 is the elevation of the natural grade of the pavilion site.</td>
</tr>
<tr>
<td>9</td>
<td>Photograph 9</td>
<td>Original Penfield Pavilion in 2008 from the seaward side</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
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<tr>
<td>10</td>
<td>Photograph 10</td>
<td>View of the new Penfield Pavilion locker room constructed in 2007-2008</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>11</td>
<td>Photograph 11</td>
<td>Original Penfield Pavilion after a storm event circa 2008</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site; further, if there were, the height of the sand adjacent to the original pavilion is most likely not representative of the site’s natural grade, but rather an accumulation/build-up over some period of time and likely facilitated by the presence of the structure. The natural grade is more likely below the elevation of sand shown in this photograph.</td>
</tr>
<tr>
<td>12</td>
<td>Photograph 12</td>
<td>Original Penfield Pavilion after a storm event circa 2008 that shows a 11.0’ NGVD 1929 Datum marking by the Town Engineer Department</td>
<td>This photograph shows what appears to be an elevation marking on the original Penfield Pavilion representing an elevation of 11.0’ NGVD 1929. The sand built-up at the location appears to be approximately 0.75 feet below this marking, placing the sand at an elevation of 10.25’ NGVD 1929. When converting this to NAVD 1988, the elevation of the sand would be 9.16’ NAVD 1988. This means that—if FEMA accepted the elevation marking as being accurate</td>
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<td>No.</td>
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<tr>
<td>13</td>
<td>Photograph 13</td>
<td>Seaward side of Penfield Pavilion after a storm event circa 2008</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site; further, if there were, the height of the sand adjacent to the original pavilion is most likely not representative of the site's natural grade, but rather an accumulation/build-up over some period of time and likely facilitated by the presence of the structure. The natural grade is more likely below the elevation of sand shown in this photograph.</td>
</tr>
<tr>
<td>14</td>
<td>Photograph 14</td>
<td>Original Penfield Pavilion circa 2007 view towards the east side of the structure</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>15</td>
<td>Photograph 15</td>
<td>Original Penfield Pavilion circa 2007 showing the cross section from the east</td>
<td>The caption in the photograph states that the height of sand below the building is at an elevation of 9.75' NAVD 1988. First, even if this information were accurate, it would demonstrate that the horizontal grade beam (at 10.7' NAVD) is above the natural grade in violation of the 44 C.F.R. § 60.3(e)(5). Second, the elevation of sand underneath the pavilion is most likely not representative of the site's natural grade, but rather an accumulation/build-</td>
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<tr>
<td>16</td>
<td>Photograph 16</td>
<td>Original Penfield Pavilion circa 2007 after demolition of the east wing</td>
<td>The photograph contains no elevation markings in order to enable FEMA to determine the natural grade elevation of the site; further, if there were, the height of the sand underneath the pavilion is most likely not representative of the site’s natural grade, but rather an accumulation/build-up over some period of time and likely facilitated by the presence of the structure.</td>
</tr>
<tr>
<td>17</td>
<td>Photograph 17</td>
<td>Original Penfield Pavilion circa 2007 after demolition of the east wing</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site; further, if there were, the height of the sand underneath the pavilion is most likely not representative of the site’s natural grade, but rather an accumulation/build-up over some period of time and likely facilitated by the presence of the structure.</td>
</tr>
<tr>
<td>18</td>
<td>Photograph 18</td>
<td>Demolition of east wing of Penfield Pavilion circa 2007 (looking toward Long Island Sound)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>19</td>
<td>Photograph 19</td>
<td>Demolition of east wing of Penfield Pavilion circa 2007 (looking from southwest)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
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<tr>
<td>20</td>
<td>Photograph 20</td>
<td>Penfield Pavilion circa 2007 showing town workers preparing formwork for the footing/foundation system</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>21</td>
<td>Photograph 21</td>
<td>Penfield Pavilion circa 2007 showing completed formwork for the footing/foundation system</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>22</td>
<td>Photograph 22</td>
<td>Penfield Pavilion circa 2009 showing completed east wing (looking from southeast)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>23</td>
<td>Photograph 23</td>
<td>Penfield Pavilion circa 2009 showing completed east wing (looking from southeast)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>24</td>
<td>Photograph 24</td>
<td>Penfield Pavilion in 2016 showing new top of grade beams (looking from east)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>25</td>
<td>Photograph 25</td>
<td>Penfield Pavilion in 2016 showing new top of grade beams (looking from southwest)</td>
<td>The photograph contains no elevation markings or other data in order to enable FEMA to determine the natural grade elevation of the site.</td>
</tr>
<tr>
<td>26</td>
<td>USGS Quadrangle Map</td>
<td>This map has 20' contour intervals, with no contours shown in the location of the pavilion. The accuracy of this map is considered to +/- 1/2 contour 95% of the time and the datum used was mean sea level.</td>
<td>The map has no contour lines below 20' and none in the location of the pavilion; as such, the map provides no data in order to determine an elevation at the pavilion site.</td>
</tr>
<tr>
<td>27</td>
<td>USGS Quadrangle Map</td>
<td>This map has 10' contour intervals and the pavilion appears to be located on the 10'</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum used in the 2006 LiDAR</td>
</tr>
<tr>
<td>No.</td>
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<td></td>
<td>USGS Quadrangle Map</td>
<td>contour. The map uses mean sea level (MSL) datum. The accuracy is this map is considered to +/- ½ contour 95% of the time.</td>
<td>data. [NAVD 1988 – MSL = -1.093']. Note: MSL was renamed NGVD 1929 in 1973]. Converting the 10' MSL elevation to NAVD 1988, the elevation of the site would be 8.91'. Assuming the map is accurate, this supports FEMA's conclusion that the natural grade elevation of the site is between 8' and 9' NAVD 1988.</td>
</tr>
<tr>
<td>28</td>
<td>USGS Quadrangle Map – 1960</td>
<td>This map has 10' contour intervals and the pavilion appears to be located on the 10' contour. The map uses mean sea level (MSL) datum. The accuracy is this map is considered to +/- ½ contour 95% of the time.</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum used in the 2006 LiDAR data. Converting the 10' MSL elevation to NAVD 1988, the elevation of the site would be 8.91'. Assuming the map is accurate, this supports FEMA's conclusion that the natural grade elevation of the site is between 8' and 9' NAVD 1988.</td>
</tr>
<tr>
<td>29</td>
<td>USGS Quadrangle Map – 1970</td>
<td>This map has 10' contour intervals and the pavilion appears to be located on the 10' contour. The map uses MSL datum. The accuracy is this map is considered to +/- ½ contour 95% of the time.</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum used in the 2006 LiDAR data. Converting the 10' MSL elevation to NAVD 1988, the elevation of the site would be 8.91'. Assuming the map is accurate, this supports FEMA's conclusion that the natural grade elevation of the site is between 8' and 9' NAVD 1988.</td>
</tr>
<tr>
<td>30</td>
<td>USGS Quadrangle Map – 1984</td>
<td>This map has 10' contour intervals and the pavilion appears to be located on the 10' contour. The map uses NGVD 1929 datum. The accuracy is this map is considered to +/- ½ contour 95% of the time.</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum used in the 2006 LiDAR data. [NAVD 1988 – NAVD 1929 = -1.093'] Converting the 10' NAVD 1929 elevation to NAVD 1988, the elevation of the site would be 8.91'. Assuming the map is accurate, this</td>
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<tr>
<td>31</td>
<td>USGS Quadrangle Map – 2012</td>
<td>This map has 10’ contour intervals and the pavilion appears to be located on the 10’ contour. This map uses NGVD 1988 datum. The accuracy is this map is considered to +/- 0.5 contour 95% of the time.</td>
<td>This map shows the pavilion to be at an elevation of 10’. However, the USGS did not change the contour lines for this 2012 map from the previous 1984 map based on the update to the new datum from NAVD 1929 to NAVD 1988. This means the elevation of the site depicted on the 2012 USGS Quadrangle Map remained 8.91’ NAVD 1988.</td>
</tr>
<tr>
<td>32</td>
<td>Topographic Maps of Town of Fairfield, CT, Sheet No. 1-29 – 1935</td>
<td>This map has 4’ contour intervals and the pavilion appears to be located on the 20’ contour line. This map uses 13.45’ below MSL datum.</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum: 20’ elevation – 13.45’ = 6.55’ NGVD 1929 6.55’ NGVD 1929 – 1.093’ = 5.46’ NAVD 1988 This means that the elevation of the site is 5.46’ NAVD 1988, which is below FEMA’s conclusion that the natural grade elevation of the site is between 8’ and 9’ NAVD 1988.</td>
</tr>
<tr>
<td>33</td>
<td>Fairfield, Connecticut, Town Plan and Zoning Commission, Drawing C-18 of 180 – 4/12/1968</td>
<td>This map has contour intervals of 2’ and appears to show the Penfield Pavilion between 8’ contours. The map uses NAVD 1929 datum.</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum: 8’ NGVD 1929 – 1.093’ = 6.91’ NAVD 1988. This means that the elevation of the site is 6.91’ NAVD 1988, which is below FEMA’s conclusion that the natural grade elevation of the site is between 8’ and 9’ NAVD 1988.</td>
</tr>
<tr>
<td>No.</td>
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<tr>
<td>34</td>
<td>Town of Fairfield, dept. of Public works, Existing conditions survey, Penfield Pavilion – April 2015</td>
<td>This map has contour intervals of 1' and, although hard to read, appears to show the Penfield Pavilion at an elevation of between 8' and 9'. This map uses NAVD 1988 datum.</td>
<td>This map shows as-built, existing conditions and is difficult to interpret. Furthermore, the 8' to 9' elevation of the site in this map directly supports FEMA's conclusion that the natural grade elevation of the site is between 8' and 9' NAVD 1988.</td>
</tr>
<tr>
<td>35</td>
<td>Town of Fairfield, CT, Sanitary Sewer System – October 30, 2017</td>
<td>This map has contour intervals of 1/4 foot and appears to show multiple contour intervals at the location of the Penfield Pavilion, ranging from 7.5' to 12'. The majority of the structure appears to be located over 8' to 9' contours The map uses NAVD 1988 datum.</td>
<td>This map shows as-built, existing conditions and is therefore of limited utility to show the elevation of the natural grade, as the Town had already installed significant amounts of fill during construction. That being said, the majority of the structure appears to be located over 8' to 9' contours, which supports FEMA's conclusion that the natural grade elevation of the site is between 8' and 9' NAVD 1988.</td>
</tr>
<tr>
<td>36</td>
<td>LIDAR Data from April 2004</td>
<td>The map has contour intervals of 1/2' and appears to show multiple contour intervals at the location of the Penfield Pavilion, ranging from 8.5' to 10.5'. The map uses NGVD 1929 datum.</td>
<td>The elevation in this map must be converted to the NAVD 1988 datum: 8.5' NGVD 1929 – 1.093' = 7.41' NAVD 1988 10.5' NGVD 1929 – 1.093' = 9.41' NAVD 1988 This means that the average elevation is 8.41' NAVD 1988, which supports FEMA's conclusion that the natural grade elevation of the site is between 8' and 9' NAVD 1988.</td>
</tr>
<tr>
<td>37</td>
<td>As-Built, Improvement Location survey of Penfield Beach – December 21, 2016</td>
<td>The elevation of the pavilion appears to be located between the 11' contour line on the seaward side and the 7' contour line located in the parking lot of the landward side. The map uses NAVD 1988 datum.</td>
<td>This map depicts as-built conditions and is not considered to be beneficial in determining natural grade of the site due to the volume of fill used in the most recent site work.</td>
</tr>
<tr>
<td>No.</td>
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<tr>
<td>38</td>
<td>Penfield Pavilion, Grade Comparison - Included with DeStefano and Chamberlain Report</td>
<td>The map uses 2017 as-built survey data with 1' contour intervals as well as 2008 LIDAR data with 0.5' contour intervals. Both data sets use NAVD 1988 datum.</td>
<td>This map was not useful due to scale limitations and unreadability.</td>
</tr>
</tbody>
</table>
November 28, 2018

William Hackett
Deputy Commissioner
Connecticut Department of Emergency Services & Public Protection
1111 Country Club Road
Middletown, CT 06457

Michael C. Tetreau
First Selectman
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824


Dear Messrs. Hackett and Tetreau:

The Federal Emergency Management Agency ("FEMA") previously approved and awarded Project Worksheet ("PW") #680 on December 17, 2015, under the Public Assistance grant for major disaster declaration FEMA-4087-DR-CT with a total approved project cost of $4,340,054.11. The applicant for this permanent work project was the Town of Fairfield ("Applicant") and the scope of work was the restoration of the Penfield Pavilion that was damaged during Hurricane Sandy. On June 30, 2016, the Connecticut Department of Emergency Services and Public Protection ("Grantee") submitted a revised scope change request for this project.

As detailed in the enclosed Public Assistance determination, I have determined that the project is ineligible for financial assistance. This is because the Applicant pursued a change in the approved scope of work without prior FEMA approval in violation of 44 C.F.R. § 13.30(d) and constructed the Penfield Pavilion in a manner that violated the federal regulations at 44 C.F.R. § 60.3(e)(5) and 44 C.F.R. § 9.11(d). It is also because FEMA was unable to complete environmental and historic preservation review before the Applicant completed the work and the Applicant never obtained a consistency determination from the Connecticut Department of Energy and Environmental Protection. As a result of the project’s ineligibility, I am terminating PW #680 and disallowing all costs.

The Applicant may appeal this determination to the Regional Administrator in accordance with the procedures and requirements set forth in Section 423 of the Stafford Act and its implementing regulation at 44 C.F.R. § 206.206. If the Applicant elects to file an appeal, the written appeal must: (1) contain documented justification supporting the Applicant’s position, (2) specify the monetary figure in dispute, and (3) cite the...
provisions in federal law, regulation, or policy with which the Applicant believes this
determination was inconsistent. As FEMA will not accept additional information after
issuance of the Regional Administrator’s appeal decision, the Applicant must submit all
relevant supporting information with its appeal. I am enclosing an Administrative
Record Index that provides the current list of documents relative to this determination.

The Applicant must file the appeal with the Grantee within 60 days of the receipt
of this letter, and the Grantee must forward the appeal and a written recommendation to
the Acting Deputy Regional Administrator within 60 days of receipt from the Applicant.
The Grantee may submit the appeal via email to doug.wolcott@fema.dhs.gov or regular
mail to the following address:

Douglas Wolcott, Jr.
Acting Deputy Regional Administrator
FEMA Region I
99 High Street, 6th Floor
Boston, MA 02110

If, after the lapse of appeal rights or utilization of all available appeals, FEMA
concludes that an amount is owed, then FEMA intends to recover that debt from the
Grantee. You may contact Tom Perry, Public Assistance Branch Chief, at (202) 320-
7583 with any questions about this determination.

Sincerely,

GEORGE F VANDERSCHMIDT
G. Fred Vanderschmidt
Disaster Recovery Manager
FEMA-4087-DR-CT

Enclosures:
(1) FEMA Public Assistance Determination Memorandum
(2) Administrative Record Index

Digitally signed by GEORGE F VANDERSCHMIDT
Date: 2018.11.28 15:07:44 -05'00'
EXHIBIT # 15
PUBLIC ASSISTANCE DETERMINATION MEMORANDUM

BASIC INFORMATION

<table>
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<tr>
<th>Applicant Name and Number:</th>
<th>Town of Fairfield</th>
<th>Applicant Type:</th>
<th>☐ State Agency</th>
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<td>Disaster Number:</td>
<td>FEMA-4087-DR-CT</td>
<td>☒ Local Government</td>
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<td>PW #:</td>
<td>680</td>
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<td>Project Cost Previously Approved:</td>
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<td>Penfield Pavilion</td>
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<td>Project Size:</td>
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<td>Eligibility Issue Type(s):</td>
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<tr>
<td>Project Cost Denied:</td>
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<td>Final Project Cost:</td>
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<td>Scope Change Request; Violation of the Terms and Conditions of the Federal Award; National Flood Insurance Program Regulations; Environmental and Historic Preservation Requirements; Remedies for Noncompliance</td>
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I. BACKGROUND

A. Project Description

The Penfield Pavilion ("Pavilion"), owned and operated by the Town of Fairfield ("Applicant"), was a 16,756 square foot single story, wood/steel frame structure that consisted of east and central/west wings. Hurricane Sandy damaged the Pavilion from October 29 to November 9, 2012, and the Applicant applied through the Connecticut Department of Emergency Services and Public Protection ("Grantee") under the Public Assistance grant for major disaster declaration FEMA-4087-DR for financial assistance to restore this damage. Upon receiving the request, FEMA prepared Project Worksheet ("PW") #680 to set forth the disaster-related damage, scope of work to restore that damage, and estimated cost for that work. FEMA, during project formulation, prepared a Cost Estimating Format ("CEF") and calculated an estimated repair cost of $2,090,442.85 and an estimated replacement cost of $3,833,932.60 in Part A of the CEF. Because the repair cost exceeded 50% of the replacement cost, FEMA concluded that the facility was eligible for replacement. FEMA awarded the project on December 17, 2015, with total estimated costs of $4,340,054.11.¹

PW #680 stated that the scope of work was "replacement" and that the Applicant must return the facility to "its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards."² The "existing building will be razed and properly disposed of..." and "the new pavilion will be built in the existing footprint on previously disturbed ground.

¹ The total estimated cost to replace the facility was $6,583,222 and, following insurance reductions of $2,250,000, FEMA calculated the final project costs of $4,340,054.11.
² PA-01-CT-4087-PW-00680, p. 5 ("PW 680").
and elevated per Codes and Standard Compliance....Noncompliance with this requirement may jeopardize the receipt of Federal funds.” 3 The scope of work also made clear that the new foundation system will be raised so the “lowest horizontal member will be 2.5 feet above the Base Flood Elevation of 13 to an elevation of 15.5 feet” and that “the new finish floor elevation would be 15.5 minimum based on a BFE of 13…” 4 PW #680 stated that “all conversations and recommendations from the Town consultants was a freeboard of 2 feet,” which is what lead to minimum elevation requirement on the replacement structure. 5 As it related to scope changes, PW #680 mandated that if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.” 6 The Applicant, in completing the project, was also required to “comply with all applicable laws and regulations...”, a requirement set forth in the FEMA-State Agreement between FEMA and Connecticut that flowed down to the Applicant. 7

B. Scope Change Request and Request for Technical Assistance under the National Flood Insurance Program

The Grantee transmitted a scope change request to FEMA for PW #680 on behalf of the Applicant in a letter dated April 29, 2016. 8 During a phone call with FEMA on May 12, 2016, the Grantee informed FEMA that there would be changes and additions to the scope change request and asked for FEMA to put the request on hold until it provided additional information. Before submitting the final scope change request, the Grantee and the Connecticut Department of Energy and Environmental Protection (“CTDEEP”) transmitted a joint letter to the Regional Office concerning PW #680 on June 1, 2016, that requested technical assistance. 9

In the technical assistance request letter, the Grantee and CTDEEP explained that the Applicant decided to repair the Pavilion instead of replacing it, commencing construction on February 29, 2016, without an approved change to the original scope of work. They also expressed concern that the revised scope of work may not comply with the minimum requirements of the National Flood Insurance Program (“NFIP”), although the Applicant asserted that the building construction plans complied with NFIP requirements. Because of the disagreement, the Grantee and CTDEEP requested that FEMA review the design plans for NFIP compliance “in order that the PA SOW be re-written accurately so that there are no reimbursement issues upon project completion.” 10 They stated that the goal of this review was to “assure all parties of the compliance with the NFIP regulations and to avoid any potential eligibility and reimbursement

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3 Id.
4 Id. at 4 and 6.
5 Id. at 4.
6 Id. at 6.
8 Letter from Dana Conover, Public Assistance Coordinator, Connecticut Department of Emergency Services and Public Protection to Paul F. Ford, Acting Regional Administrator, FEMA Region 1 re: Revision to Change in Scope of Work request: The Town of Fairfield DR-4087-CT PW-680 (Penfield Pavilion) (Apr. 29, 2016).
10 Id. at 2.
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concerns upon completion of the PA project.\textsuperscript{11} The letter included the design plans for the Penfield Pavilion.

The Grantee later provided a revised scope change request on June 30, 2016, which superseded the previous request dated April 29, 2016.\textsuperscript{12} The scope change request called for repairing the Pavilion rather than replacing it, citing to cost savings as a motive for the change. The following provides a summary of the requested changes identified by the Applicant:

- **West Wing** – The Applicant stated that the finished portion of the West Wing (referred to as the central/west wing in PW #680) will remain intact and re-utilized. The building will be shored on temporary steel beams and cribbing towers and rolled on the parking lot for storage. The old foundations will be picked out of the ground, timber piles will be driven to the required capacity to support building loads and embedment to reduce scour, and concrete grade beams will be poured to cap the piles and transfer loads to them from the structure. The structure will then be rolled back into its old position on top of the new steel columns and beams. Utilities will be reconnected and all necessary repairs to electrical, HVAC, fire protection, and alarm systems will be performed.

- **Locker Wing** – The Applicant stated that it would demolish and reconstruct the unfinished Locker Wing (referred to as the east wing in PW #680) rather than moving the structure twice and elevating it. Timber piles will be driven to the required capacity to support building loads and to the embedment to reduce scour. The two wings will be separated by a new continuous covered breezeway.

- **Exterior Wooden Deck** – The exterior wooden deck will be demolished and a new wooden pile system will be installed and wood deck constructed. Because the transition between the elevation of the deck and the beach will be greater due to the increased height of the building (which will now have the lowest structural member of the lowest floor at 13 feet), the Applicant will install a patio at an elevation of 12 feet midway between the elevation of the building and the beach.

- **Parking Lot** – The parking lot will be re-graded by placing low cost road millings to steepen the pitch slightly. This will raise the high point of the lot along the front of the building and reduce the extent of stairs and ramps required from the parking lot level. A new intermediate grade plane will be established under and around the building by placing fill up to elevation 11 feet (under) and 12 feet (around). The footprint of the

\textsuperscript{11} Id.

\textsuperscript{12} Letter from Dana Conover, Public Assistance Coordinator, Connecticut Department of Emergency Services and Public Protection, to Paul F. Ford, Acting Regional Administrator, FEMA Region I, re: Revision to Change in Scope of Work Request: The Town of Fairfield DR-4087-CT PW-680 (Penfield Pavilion) (June 30, 2016). This letter included the request that the Applicant submitted to the Grantee that detailed the scope revisions. See Letter from Joseph Michelangelo, Director of Public Works, Town of Fairfield to Dana Conover, Public Assistance Coordinator, State of Connecticut re: Disaster Number DR-4087-CT Project Worksheet = PA-01-CT-4087-PW-680 Category G – Large Project – Penfield Pavilion (June 30, 2016).
parking lot and number of spaces are being maintained.\textsuperscript{13} The Grantee also provided a letter in the scope change request package from the NFIP/Community Rating System ("CRS") Coordinator from the Town of Fairfield that asserted that the requested, revised scope complied with the requirements of the NFIP and met the guidance provided in FEMA Technical Bulletin \#5.\textsuperscript{14} In that letter, the NFIP/CRS Coordinator stated that the "lowest horizontal structural member will be at or above the base flood elevation with the required open pier foundation to allow the passage of flood waters" and there is a "breakaway wall design certified by a respected professional engineer with substantial experience in V-Zone construction."\textsuperscript{15} This proposed scope was subject to a public hearing and "was approved by the Town Plan and Zoning Commission on June 9, 2015."\textsuperscript{16}

FEMA responded to the Grantee’s and CTDEEP’s request for technical assistance in a letter dated August 9, 2016.\textsuperscript{17} In the letter, FEMA explained that there were concerns that the scope of work being pursued by the Applicant may not comply with the Fairfield Zoning Regulations, 44 C.F.R. \S 60.3, and 44 C.F.R. \S 9.11(d). FEMA was specifically concerned that the design plans failed to meet the requirements of 44 C.F.R. \S 60.3 due to the use of fill for structural support, presence of obstructions in the VE zone, and the lowest horizontal structural support element being below the base flood elevation. The letter next explained that the Applicant may have violated the terms and conditions of the project award by commencing a different scope of work without obtaining prior approval from FEMA, particularly the actions of repairing the Pavilion rather than replacing the structure and not bringing the lowest floor to an elevation of 15.5 feet as detailed in the scope of work for PW \#680. In addition, the letter expressed uncertainty regarding whether the current design for the Pavilion fell within the scope of FEMA’s environmental and historic preservation ("EHP") review.

FEMA, in light of these issues, placed a financial hold on PW \#680 and informed the Grantee and Applicant that it would be issuing a formal request for information ("RFI") to obtain more information before FEMA made any final determinations. And FEMA made very clear the Grantee and Applicant should carefully consider whether the Applicant should continue performing its construction of the Pavilion, as such work could compromise future eligibility.\textsuperscript{18}

\textsuperscript{13} See Scope Alignment, FEMA Disaster Number DR-4087-CT Project Worksheet \# PA-01-CT-4087-PW-680 Category G – Large Project – Penfield Pavilion (which was an attachment to the Letter from Joseph Michelangelo, supra note 12).

\textsuperscript{14} Letter from James R. Wendt, AICP, Assistant Planning Director, NFIP/CRS Coordinator, Town of Fairfield, to Dana Conover, Public Assistance Coordinator, Connecticut Division of Emergency Management & Homeland Security re: Penfield Pavilion, 323 Fairfield Beach Road, Fairfield, CT (June 28, 2016).

\textsuperscript{15} Id. at 1.

\textsuperscript{16} Id.


\textsuperscript{18} Id. at 6 ("The Grantee and Applicant should also carefully consider whether the Applicant should continue performing its construction of the pavilion, as such work could compromise future eligibility.").
C. Request for Information

FEMA sent a RFI to the Applicant and Grantee on or about September 30, 2016. In the RFI, FEMA identified and requested information pertaining to three issues. The first issue was whether the Applicant’s proposed design complied with the minimum requirements of 44 C.F.R. § 60.3(e)(4)-(6), the Fairfield Zoning Regulations, and 44 C.F.R. § 9.11(d). The RFI explained that the concerns were: (1) whether the horizontal grade beams were located above the natural grade and below the base flood elevation and, if so, whether they comprised a violation of 44 C.F.R. § 60.3(e)(4) or an impermissible obstruction in violation of 44 C.F.R. § 60.3(e)(5); (2) whether the large quantities of fill installed by the Town comprised an impermissible obstruction in violation of 44 C.F.R. § 60.3(e)(5) and whether that fill was used for structural support in violation of 44 C.F.R. § 60.3(e)(6); and (3) whether the placement of a retaining wall above the natural grade and below the base flood elevation comprised an impermissible obstruction in violation of 44 C.F.R. § 60.3(e)(5).

The second issue was whether FEMA would take a remedy for noncompliance for the Applicant’s violation of the terms and conditions of the Public Assistance award. The RFI stated that the regulation at 44 C.F.R. § 13.30(d)(1) and PW #680 mandated that the Applicant and Grantee obtain the prior approval of FEMA before any scope revision and then noted the various scope changes that the Applicant has pursued in violation of these terms and conditions. These included, among other things, pursuing replacement of the Pavilion instead of repair; making the elevation of the lowest floor of the Pavilion below 15.5 feet; and regrading and placing fill in the parking lot next to the Pavilion. The third issue was whether the proposed scope of work that the Applicant had already commenced qualified for a categorical exclusion from the National Environmental Policy Act (“NEPA”) in Department policy, triggered the need for consultation under the National Historic Preservation Act (“NHPA”), and was covered by a consistency determination from CTDEEP.

The Applicant responded to the RFI in a letter dated October 28, 2016, that the Grantee forwarded to FEMA along with its own letter on that same date. In regards to the first two issues, the Applicant asserted that its change of scope request comported with the minimum floodplain management requirements of the NFIP and that it did not violate the material terms and conditions of the award by performing its revised scope of work without notifying FEMA and obtaining prior approval because all of the work completed to the date of the letter was within the original scope of work. In regards to the third issue, the Applicant stated that the

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change of scope request did not trigger the requirement for an environmental impact statement or environmental assessment. The Applicant provided several documents supporting its answers to the RFI, including but not limited to the building plans for the Pavilion and a letter from a professional engineer which stated that the plans for the Pavilion project conformed to the NFIP, Town of Fairfield Zoning Regulations, the State of Connecticut Building Code, and the standard ASCE 24 "Flood Resistant Design and Construction."\footnote{Id.}

In its cover letter transmitting the Applicant's response to the RFI, the Grantee also provided its reasons for the change in scope request and attempted to respond to FEMA's concerns. The Grantee stated that repairing rather than replacing the Pavilion would reduce the overall cost of the project and that the Applicant had not violated the terms of the PW by beginning work on the project before FEMA approval because all of the completed work was within the original scope of work for the PW. The one remaining question, according to the Grantee, was whether the Applicant's change of scope request was in compliance with NFIP requirements, specifically Technical Bulletin 5's requirement that the open foundation beneath the proposed structure be obstruction free.\footnote{Id.} If FEMA were to determine that the design was noncompliant with Technical Bulletin 5, the Grantee requested that FEMA provide specific corrective actions which would bring this design into compliance.\footnote{Id.}

D. National Flood Insurance Program Determination

FEMA reviewed the information provided in response to the RFI and issued a response to the request for technical assistance concerning whether the unapproved scope of work completed by the Applicant to restore Penfield Pavilion complied with the minimum floodplain management criteria set forth in 44 C.F.R. pt. 60.\footnote{Letter from Richard Nicklas, Branch Chief, Floodplain Management and Insurance, FEMA Region I to Dana Conover, Public Assistance Coordinator, Connecticut Department of Emergency Services & Public Protection and Diane Ilkovic, National Flood Insurance Program Coordinator, Connecticut Department of Energy & Environmental Protection re: FEMA-4087-DR - Town of Fairfield - PA-1D 001-26620-00 - Project Worksheet 680 - Restoration of Penfield Pavilion - Violation of the Minimum Floodplain Management Criteria at 44 C.F.R. § 60.3 and Technical Bulletin 5 (Oct. 17, 2017).} This letter, issued by the Floodplain Management and Insurance Branch Chief on October 17, 2017, explained that the Town did not demonstrate compliance with the minimum floodplain management criteria. The Branch Chief—before moving forward to take an enforcement action under the NFIP—provided the Applicant with the opportunity to provide additional information.

The Applicant later provided additional information via a letter dated December 2, 2017.\footnote{Letter from Michael C. Tetreau, First Selection, Town of Fairfield to Richard Nicklas, Branch Chief, Floodplain Management and Insurance, FEMA Region I re: FEMA-4087-DR - Town of Fairfield - PA-1D 001-26620-00 - Project Worksheet 680 (Dec. 12, 2017).} This additional information included, among other things, a series of historical photographs of the buildings at the site and grades over the past 100 years; U.S. Geological Service ("USGS") quadrangle maps from 1920-2016 to illustrate the general land formation; other historic mapping products; an engineering report prepared by DeStefano-Chamberlain; and an engineering report prepared by Race Coastal Engineering. Before the submission of this information, FEMA, the
Grantee, and the Applicant conducted a teleconference on November 20, 2017, to discuss the information to be submitted.

The Floodplain Management and Insurance Branch Chief reviewed the information provided and determined that the Applicant did not demonstrate that the Pavilion complies with 44 C.F.R. pt. 60. The determination, issued on November 28, 2018, explained that the Applicant had placed horizontal grade beams for the Pavilion’s foundation system above the natural grade and below the base flood elevation that comprised an obstruction in violation of 44 C.F.R. § 60.3(e)(5). The Branch Chief closed his letter by stating that FEMA would be contacting Town of Fairfield officials to discuss potential remedial actions to address the violation and potential enforcement actions.

II. ISSUES

A. **Issue 1:** The first issue is whether the Applicant failed to obtain prior FEMA approval before commencing the change in the scope of work as required by 44 C.F.R. § 13.30(d)(1) and PW #680.

B. **Issue 2:** The second issue is whether the Pavilion violates the minimum floodplain management criteria requirements under 44 C.F.R. § 60.3(e)(5).

C. **Issue 3:** The third issue is whether the Pavilion violates the minimization standards of 44 C.F.R. pt. 9.

D. **Issue 4:** The fourth issue is whether the Applicant violated the consistency review requirements under the Coastal Zone Management Act.

E. **Issue 5:** The fifth issue is whether FEMA will take any remedies for noncompliance concerning this project.

III. APPLICABLE LAW, REGULATION, AND POLICY


Section 318 (codified as amended at 42 U.S.C. § 5161) (Audits and Investigations)

Section 321 (codified as amended at 42 U.S.C. § 5164) (Rules and Regulations)

Section 406 (codified as amended at 42 U.S.C. § 5172) (Repair, Restoration, and Replacement of Damaged Facilities)

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Section 701 (codified as amended at 42 U.S.C. § 5201) (Rules and Regulations)


   Section 307 (codified as amended at 16 U.S.C. § 1456) (Coordination and Cooperation)


   Section 1315 (codified as amended at 42 U.S.C. § 4022) (State and Local Land Use Controls)

D. Title 44 of the Code of Federal Regulations (Emergency Management and Assistance)

   Part 9 (Floodplain Management and Protection of Wetlands)
   
   44 C.F.R. § 9.11 (Mitigation)

   Part 13 (Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments)
   
   44 C.F.R. § 13.30 (Changes)

   44 C.F.R. § 13.40 (Monitoring and Reporting Program Performance)

   44 C.F.R. § 13.43 (Enforcement)

   Part 59 (General Provisions)
   
   44 C.F.R. § 59.1 (Definitions)

   44 C.F.R. § 59.22 (Prerequisites for the Sale of Flood Insurance)

   44 C.F.R. § 59.24 (Suspension of Community Eligibility)

   Part 60 (Criteria for Land Management and Use)
   
   44 C.F.R. § 60.3 (Floodplain Management Criteria for Flood-prone Areas)

   Part 206 (Federal Disaster Assistance)
   
   44 C.F.R. § 206.226 (Restoration of Damaged Facilities)

E. Title 15 of the Code of Federal Regulations (Commerce and Foreign Trade)

   Part 930 (Federal Consistency with Approved Coastal Management Programs)
15 C.F.R. § 930.90 (Objectives)
15 C.F.R. § 930.96 (Consistency Review)
15 C.F.R. § 930.97 (Federal Assisting Agency Responsibility)

F. DHS and FEMA Policies

FEMA 322, Public Assistance Guide (June 2007)


FEMA Instruction No. 108-1-1, Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements (Aug. 22, 2016)

IV. ISSUE 1 – CHANGE IN THE SCOPE OF WORK

A. Applicable Law, Regulation, and Policy

Financial Assistance for Permanent Work

FEMA is responsible for administering and coordinating the federal government’s response to presidentially declared disasters pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act ("Stafford Act"). The Stafford Act is triggered when, at the request of a Governor of a state, the President declares an affected area to be a “major disaster.”29 Once the major disaster is declared, the President and FEMA will designate the type of discretionary assistance to be made available in the declared area, which can include financial assistance under Section 406 of the Stafford Act for a local government to repair, restore, reconstruct, or replace a public facility damaged or destroyed by the major disaster.30 FEMA administratively carries out its Section 406 authority as “permanent work” under the umbrella of its Public Assistance Grant Program.

The Public Assistance Grant Program is a discretionary program; it is not an entitlement program. The statutory language authorizing the discretionary authority to provide financial assistance for permanent work makes this very clear, as Section 406 states that “The President may make contributions...”31 Discretion in FEMA Public Assistance Grant Program implementation is also prevalent in FEMA implementing regulations and policies—they do not require FEMA to approve any Public Assistance funding request, but rather refer to permanent work projects and associated costs that are “eligible” and that FEMA could choose to, and is not

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31 Id. (emphasis added).
required to provide financial assistance for. \textsuperscript{32} FEMA is authorized to interpret and implement the Stafford Act and the rules and regulations issued pursuant to this authority. \textsuperscript{33}

\textit{Environmental and Historic Preservation Review}

FEMA must consider and comply with a wide range of federal laws, regulations, and executive orders concerning environmental protection and historic preservation ("EHP") when providing financial assistance for permanent work. \textsuperscript{34} These include, among others, NEPA, NHPA, Executive Order 11988, 44 C.F.R. pt. 9, and the Coastal Zone Management Act. The size and type of the project and project site and conditions generally determine the level of review that must be performed. The compliance review process must be completed before FEMA approves funding and before work is started because "the review may identify steps to be taken or conditions to be met before the project can be implemented, including possible consultation with other federal agencies and public notification." \textsuperscript{35} When an applicant initiates or completes work on a permanent work project or a scope change on an approved project before FEMA is able to conduct the necessary EHP review, an applicant is generally ineligible for Public Assistance funding. \textsuperscript{36}

\textit{Scope of Work and Modifications}

One of the most critical elements of the Public Assistance grant is the scope of work set forth in the individual Project Worksheets. The Project Worksheet is the form used by FEMA to document the disaster damage to a facility, eligible scope of work to restore the facility, and estimated costs. \textsuperscript{37} Once FEMA awards a PW, a relationship is created between FEMA and a grantee that results in certain legal obligations. The grantee commits to the scope of work being performed and has a duty to account to FEMA for the use of funds only for the authorized scope of work. FEMA, in turn, has a right to expect that the grantee and the applicant will use the Public Assistance funds only for the authorized scope of work in a project and only in accordance with the terms and conditions of the award. It is the responsibility of the grantee to "manage[ ] the day to day operations of...subgrant supported activities" and to "monitor...subgrant supported activities to assure compliance with applicable Federal...".

\textsuperscript{32} 44 C.F.R. § 206.226.
\textsuperscript{35} FEMA 322, Public Assistance Guide, at 127-128 (June 2007).
\textsuperscript{36} See, e.g. FEMA Second Appeal Analysis, Village of Pardueville, FEMA-1768-DR-WI (Dec. 16, 2014); FEMA Second Appeal Analysis, Town of Springtown, FEMA-1751-DR-AR (Mar. 27, 2015); FEMA Second Appeal Analysis, Essex County, FEMA-4020-DR-NY, at 5-6 (Aug. 18, 2016); FEMA Second Appeal Analysis, Township of Rapidan, FEMA-1941-DR-MN (Sep. 14, 2016); FEMA Second Appeal Analysis, Reclamation District -800, FEMA-1628-DR-CA (Mar. 15, 2016); FEMA Second Appeal Analysis, City of Sunnyside, FEMA-4007-DR-WY.
requirements... 38

FEMA’s former regulations at 44 C.F.R. pt. 13 set forth uniform administrative rules for grants and subgrants to state and local governments and FEMA made compliance with these regulations a condition of the Public Assistance grant for FEMA-4087-DR. 39 The Grantee agreed to these requirements as part of the FEMA-State Agreement and these requirements flowed down to the Applicant. Pursuant to 44 C.F.R. § 13.30(d)(1), the Grantee and Applicant must obtain the prior approval of FEMA before any revision of the scope or objectives of a Public Assistance construction project. 40 This is true regardless of why the scope is being revised (e.g., improved project, alternate project, or general scope change) and regardless of whether there is an associated budget change. 41 The requirement for prior approval provides FEMA with the opportunity to, among other things, review the scope changes for programmatic eligibility and conduct all necessary EHP reviews before the work is completed.

B. The Applicant Failed to Obtain Prior Approval for a Change in the Scope of Work and Violated the Terms and Conditions of the Award

The FEMA-approved scope of work under PW #680 was the “replacement” of the Pavilion. 42 As described in PW #680, the “existing building will be razed and properly disposed of...” and “the new pavilion will be built in the existing footprint on previously disturbed ground and elevated per Codes and Standard Compliance.” The scope of work also made clear that the lowest horizontal member of the lowest floor of the Pavilion will be 2.5 feet above the BFE at an elevation of 15.5 feet. Rather than pursuing the FEMA-approved scope of work, the Applicant

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38 44 C.F.R. § 13.40.
39 FEMA-State Agreement, Exhibit B (General Conditions), ¶ 3 (“The State agrees to comply with the requirements of laws and regulations found in the Stafford Act and 44 CFR.”); Exhibit C, Article III (“The Grantee agrees to comply with all applicable laws and regulations, including but not limited to the following laws, regulations, and OMB circulars that govern standard grant management practices and are incorporated into this Agreement by reference... Title 44 of the Code of Federal Regulations, which includes Part 13, FEMA’s implementation of OMB Circular A-102 – Uniform Administrative Requirements for Grants and Cooperative Agreements with State and Local Governments...”).
40 44 C.F.R. § 13.30(d)(1) (2012) (“(d) Programmatic Changes. Grantees and subgrantee must obtain the prior approval of the awarding agency whenever any of the following actions is anticipated: (1) Any revision to the scope or objectives of the project...”); see also FEMA Second Appeal Analysis, Cameron Parish School Board, FEMA-1607-DR-LA, at 7 (July 2, 2018) (“However, when an applicant changes the SOW or needs additional funding, it must obtain the prior approval of FEMA.”); FEMA Second Appeal Analysis, University of Houston-Main Campus, FEMA-1791-DR-RX, at 3 (June 2, 2017) (“Per Title 44 of the Code of Federal Regulations (44 C.F.R.) § 13.30(d)(1), an applicant must obtain FEMA’s approval prior to revising the scope of objectives of a project.”).
41 Public Assistance Guide, supra note 35, pp. 139-140; see also FEMA Second Appeal Analysis, Township of Rapidan, FEMA-1941-DR-MN, at 3 (Sep. 14, 2016); FEMA Second Appeal Analysis, Essex County, FEMA-4020-DR-NY, at 5-6 (Aug. 18, 2016) (“Pursuant to 44 C.F.R. § 13.30(d)(1), applicants must obtain prior approval from FEMA whenever there is any revision of the scope of work or objectives of the project. This is true regardless of the reason necessitating the change (e.g., hidden damage discovered, improved project, alternate project, or general scope change) because it allows FEMA to carry out related functions such as additional environmental and historic preservation (EHP) compliance reviews, as well as the Applicant to obtain the necessary environmental permit. When an applicant materially fails to comply with any term of an award FEMA may disallow all or part of the grant award.”).
42 PW #680, at 6 (“The current Scope of Work is written as a replacement.”).
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has repaired the Pavilion and not replaced it and did not elevate the lowest floor to an elevation of 15.5 feet, which was a fundamental change in the scope of work.

The scope of work actually completed by the Applicant, furthermore, involved changes to the method of construction and a number of items of work not originally contemplated in the original replacement scope. For example, rather than demolishing and rebuilding the central/west wing, the Applicant placed the building on temporary steel beams and cribbing towers, rolled it onto the parking lot for storage, and then rolled it back once the foundation was built. The Applicant also re-graded the parking lot by placing low cost road millings to steepen the pitch that involved the use of fill and, in addition the parking lot, the Applicant placed a large amount of fill on the site during the restoration of the Pavilion, all of which was not mentioned at all in the original scope of work and did not undergo EHP review.

The regulation at 44 C.F.R. § 13.30(d)(1) required the Grantee and Applicant to obtain prior approval before changing the scope of work. Furthermore, PW #680 unambiguously mandated that, if the Applicant “wishes to alter the approved scope of work, [it] must formally request approval for such changes to the approved scope of work from FEMA, thru the Grantee, prior to beginning construction.” As the Applicant changed the scope of work without prior approval, it has violated the regulation at 44 C.F.R. § 13.30(d)(1) and the specific term included in PW #680. The Grantee, furthermore, has violated the regulation at 44 C.F.R. § 13.40 by not monitoring the Applicant’s activities to assure compliance with applicable Federal requirements.

The Applicant stated in its response to the RFI that it did not breach the terms of PW #680 because the work performed before its request for a change in scope was within the scope of work that had been authorized by PW #680.43 Specifically, the Applicant began work on the project on February 29, 2016, and that the initial work performed was within the original scope of work since it “involved demolishing the locker wing and deck, and driving piles for the new structure, as well as site and preparation work.”44 The final version for a Change of Scope Request was sent to FEMA on June 30, 2016, and the Applicant contends that all work performed on the Pavilion to that point was within the approved scope of work in PW #680. Even assuming, arguendo, that the Applicant did submit its scope change request before performing any work outside the original scope, the Applicant still moved forward with performing its revised scope of work without receiving prior FEMA approval.

FEMA, furthermore, put the Applicant on notice in August 2016 that FEMA had placed the project on financial hold and that continuing work on the Pavilion without waiting for FEMA approval might result in the total ineligibility of the project. The Applicant, notwithstanding this warning, moved forward anyway to complete the work without waiting for FEMA review and approval. This was a notable decision because, as pointed out in the following sections, FEMA would not have approved the revised project scope because it violated 44 C.F.R. § 60.3(e), 44 C.F.R. § 9.11(d), and various other laws and regulations. Furthermore, because the Applicant moved forward to complete the work before FEMA could complete its review, it precluded the possibility of the Applicant changing its design to meet the strictures of these requirements and

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43 Michael C. Tetreau, supra note 20, at 2-3.
44 Id.
the ability of FEMA to conduct its EHP review under NEPA, NHPA, and other environmental laws and regulations before the Applicant initiated the work.

The Applicant also argued that it commenced work before receiving a response to the request for scope change request because—if it stopped or delayed work—the project would be subject to re-bid resulting in significant increase of cost to both Applicant and FEMA. 15 Although the Pavilion was repaired rather than replaced, the Applicant stated that its actions were justified because the decision resulted in an efficient cost-saving construction project that was completed before any further damage could be done to the site by other incidents. FEMA finds these arguments unpersuasive, as the potential for cost savings or project delays do not supersede the requirement to obtain prior approval from FEMA for a scope change. The simple fact is this—the Applicant changed the scope of work without obtaining prior FEMA review and approval and, in doing so, the Applicant and Grantee materially failed to comply with the terms and conditions of the Public Assistance award.

V. ISSUE 2 – COMPLIANCE WITH THE FLOODPLAIN MANAGEMENT CRITERIA UNDER 44 C.F.R. PT. 60

A. Applicable Law, Regulation, and Policy

A community must adopt and adequately enforce floodplain management regulations that meet or exceed the requirements of 44 C.F.R. Part 60 in order to qualify for the sale of flood insurance under the NFIP. 16 The overriding purpose of the floodplain management regulations is to ensure that participating communities take into account flood hazards, to the extent that they are known, in all official actions relating to land management and use. When FEMA discovers an instance where a community has failed to adequately enforce the minimum requirements, it will identify the violation to the community and often provide an opportunity to remedy the violations to the maximum extent possible within established deadlines. 17

The NFIP regulation at 44 C.F.R. § 60.3 includes minimum building design criteria that apply to new construction, substantially damaged buildings, and substantial improvement of existing buildings in a SFHA. The requirements under this regulation are different depending on whether FEMA has provided base flood elevations for various types of flood zones in the community, designated the regulatory floodway on the Flood Insurance Rate Map (“FIRM”), and identified the coastal high hazard areas (V Zones) on the FIRM. The current FIRM for the Town of Fairfield designates a regulatory floodway and coastal high hazard areas, such that the requirements of 44 C.F.R. § 60.3(e) apply.

The Town is a participating community in the NFIP and has adopted the Fairfield Zoning Regulations that meet the minimum requirements of 44 C.F.R. pt. 60. 18 The Fairfield Zoning

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15 Id.
17 See FEMA F-776, Guidance for Conducting Community Assistance Contacts and Community Assistance Visits, at 7-1 to 6 (Apr. 2011); 44 C.F.R. § 59.24.
Regulations, in turn, require that buildings and structures in flood prone areas as delineated on a FIRM “shall conform” to the standards set forth in Section 32 (entitled “Flood Protection”), which incorporate the requirements of 44 C.F.R. § 60.3 at Section 32.5.

One of the requirements in the regulation is 44 C.F.R. § 60.3(e)(5), which states that substantial improvements in the VE Zone must not have obstructions below the lowest floor:

[T]he community shall:...Provide that all new construction and substantial improvements within Zones...VE...on the community’s FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. 49

For the requirements of 44 C.F.R. § 60.3(e)(5) to apply, there must be a “substantial improvement” of a structure. The regulation at 44 C.F.R. § 59.1 defines “substantial improvement” as “any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the ‘start of construction’ of the improvement. ...” 50 This term includes a structure which has incurred “substantial damage,” regardless of the actual repair work performed. 51 “Substantial damage” means “damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.” 52

FEMA has promulgated Technical Bulletin 5 to provide interpretive guidance concerning the structural fill and free-of-obstruction requirements in coastal high hazard areas (marked as V Zones on a FIRM) under 44 C.F.R. § 60.3(e)(5) as well as the general requirement for construction that will minimize flood damage potential as it applies to V Zone construction. 53 Technical Bulletin 5 explains that 44 C.F.R. § 60.3(e) requires that all new and substantially improved structures in V Zones be elevated to or above the base flood elevation (“BFE”) on open foundations (pilings, columns, or piers, and, sometimes, shear walls) that allow floodwaters and waves to pass beneath the elevated structures. 54 It also explains that the regulation requires that the area beneath these elevated structures remain free of any obstructions that would prevent the free flow of coastal floodwaters and waves during a base flood event. 55 FEMA has instituted these requirements under the NFIP to “minimize the transfer of flood forces to the building foundation and to preclude the deflection or redirection of flood forces that could damage the elevated building or neighboring buildings.” 56

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49 44 C.F.R. § 60.3(e)(5).
50 Id. § 59.1.
51 Id.
52 Id.
54 Id. at 1.
55 FEMA Technical Bulletin 5, supra note 53, p. 1; see also 44 C.F.R. § 60.3(e)(5).
56 Id.

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Technical Bulletin 5 provides various guidance regarding common building elements that may significantly affect the free passage of flood flow and waves under elevated buildings, one of which are horizontal grade beams that are not part of the lowest floor. First, the Technical Bulletin states that horizontal grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP. Second, the Technical Bulletin makes no allowance for the placement of horizontal grade beams above the natural grade and below the BFE. This is because such a horizontal grade beam would constitute an impermissible obstruction under 44 C.F.R. § 60.3(e)(5).

The "natural grade" of a location means the grade unaffected by construction techniques such as fill, landscaping, or berms. A FIRM promulgated by FEMA will delineate the SFHA and the BFEs for a community, but will not identify the natural grade of any particular location. As the FIRM does not identify the elevation of the natural grade, determining the natural grade for a specific location (such as the site of the Penfield Pavilion) requires the analysis of site specific topographical data, any available contour maps, light detection and ranging ("LIDAR") data, field observations of surrounding topography, photographs, and other available data.

B. The Applicant Violated 44 C.F.R. § 60.3 by Placing the Horizontal Structural Members Above the Natural Grade and Below the Base Flood Elevation

The construction of the restored Penfield Pavilion must have conformed to the regulations at 44 C.F.R. pt. 60 and Fairfield Zoning Regulations. This was made clear in PW #680, which stated that the Applicant must return the site "to its original design, function, and capacity within the original footprint, meeting all appropriate Codes and Standards." In this case, the Town placed horizontal grade beams of the Pavilion’s foundation at an elevation of 10.7’ NAVD 1988. The three issues, accordingly, are: (1) determining whether the project site is in the VE Zone; (2) if in the VE Zone, determining the elevation of the site’s natural grade in order to evaluate whether the horizontal grade beams’ elevation of 10.7’ NAVD 1988 is below the natural grade; and (3) determining whether the horizontal grade beams comprise an impermissible obstruction under 44 C.F.R. § 60.3(e)(5).

The FEMA Region I Floodplain Management and Insurance Branch Chief issued a determination on November 28, 2018, that addressed all three issues. In his determination, he concluded that there was a substantial improvement of the Pavilion, the Pavilion is located in the VE Zone, the elevation of the natural grade at the site is between 8.0’ to 9.0’ NAVD 1988, and the BFE of the site is 13.0’ NAVD 1988. Because the horizontal grade beams are above the natural grade and below the BFE, the Branch Chief determined that the Pavilion violates the free-of-obstruction requirement at 44 C.F.R. § 60.3(e)(5) and, by necessary implication, violates

57 Id. at 13 (“Grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP.”).

58 See also FEMA Technical Bulletin 10, Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe from Flooding, at 3 (May 2001) (“Buildings constructed in a V zone must be constructed on an open foundation consisting of piles, piers, or posts and must be elevated so that the bottom of the lowest structural members is at or above BFE.”) (emphasis added).


60 FEMA Second Appeal Analysis, County of Kauai, FEMA-961-DR-HI, Appendix I, page A-3 (June 1, 1995)
the Fairfield Zoning Regulations.\(^{61}\) I concur with the Branch Chief’s determination and his letter of November 28, 2018, is incorporated by reference into this Public Assistance determination. As a result, the project is ineligible for financial assistance.

VI. ISSUE 3 – COMPLIANCE WITH 44 C.F.R. PT. 9

A. Overview of Applicable Regulations

Executive Order 11988, Floodplain Management requires federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains in providing federally assisted or financed construction and improvements and conducting federal programs affecting land use.\(^{62}\) Each federal agency is directed to use a decision-making process to evaluate the potential effects of projects located in or affecting the floodplain and consider alternatives to avoid adverse effects. Pursuant to this direction, FEMA has adopted implementing regulations at 44 C.F.R. pt. 9, Floodplain Management and Protection of Wetlands to set forth the policy, procedures, and responsibilities to implement and enforce the Executive Order.

The regulations at 44 C.F.R. pt. 9 apply to “all Agency actions which have the potential to affect floodplains...or their occupants, or which are subject to potential harm by location in floodplains ...”\(^{63}\) An agency “action” means, among other things, “providing federally undertaken, financed, or assisted construction and improvements”\(^{64}\)—as such, FEMA applies 44 C.F.R. pt. 9 to all projects under a Public Assistance grant for a major disaster. The compliance review process under 44 C.F.R. pt. 9 must be completed before FEMA approves funding and before work is started because the review may identify steps to be taken or conditions to be met before the project can be implemented, such as mitigation measures for actions in the floodplain.

The regulations at 44 C.F.R. pt. 9 begin by setting forth FEMA’s broad guiding policy to provide leadership in floodplain management and then lay out certain actions that FEMA will take in carrying out that policy. After setting FEMA’s broad policies, the regulation at 44 C.F.R. § 9.6 then lays out an 8-step process for conducting floodplain management and wetland protection reviews before the approval of grant funding.\(^{65}\) Steps 1 and 2 involve evaluating whether the action is taking place in or will affect the floodplain and notifying the public of the intent to carry out actions in the floodplain. Step 3 involves a preliminary determination as to whether the floodplain is the only practicable location for the action—if FEMA determines that no practicable alternative exists outside the floodplain and the original location itself is a practicable location,\(^{66}\) then it will determine the impact of the proposed action in the floodplain in Step 4.

FEMA will then, during Step 5, minimize the potential adverse impacts and support to or within floodplains to be identified under Step 4, restore and preserve the natural and beneficial values

\(^{61}\) Letter from Richard Nicklas, supra note 27.


\(^{63}\) 44 C.F.R. § 9.5(a) (emphasis added).

\(^{64}\) Id. § 9.4 (definition of “Action”).

\(^{65}\) Id. § 9.6.

\(^{66}\) Id. § 9.9(b)(3).
served by the floodplains.\textsuperscript{67} As part of Step 5, the regulation at 44 C.F.R. § 9.11 sets out the \textit{mitigative} actions required if the preliminary determination is made to carry out an action that affects or is in a floodplain.\textsuperscript{68} The “general provisions” for mitigation in 44 C.F.R. § 9.11(b) provide that FEMA shall “design and modify its actions so as to minimize harm to or within the floodplain” and “restore and preserve natural and beneficial floodplain values.”\textsuperscript{69} As it relates to specific mitigation actions for all FEMA actions, the regulation at 44 C.F.R. § 9.11(c) identifies “minimization provisions” stating that FEMA “shall minimize” the potential harm to lives and the investment at risk from the base flood; potential adverse impacts the action may have on others; and potential adverse impact the action may have on floodplain values.\textsuperscript{70}

These “general” and “minimization” provisions at 44 C.F.R. § 9.11(c) apply to all FEMA actions. That being said, the regulation goes on to lay out specific “minimization standards” that apply only during FEMA’s implementation of the Stafford Act. The regulation, which is 44 C.F.R. § 9.11(d), states that FEMA, when implementing the Stafford Act, “shall apply the following standards to its actions to comply with the requirements [of the general provisions and the minimization provisions].…” and then sets forth nine specific minimization standards. The sixth minimization standard—44 C.F.R. § 9.11(d)(6)—states that “no action shall be taken if it is inconsistent with the criteria of the National Flood Insurance Program (44 C.F.R. part 59 \textit{et seq.}) or any more restrictive Federal, State, or local floodplain management standards.”

After identifying the required minimization measures, FEMA re-evaluates during Step 6 the proposed action and other practical alternatives identified in Step 3 based on new information gained in Steps 4 and 5. The public is then informed of the final decision that the floodplain is the only practicable alternative during Step 7 and the Public Assistance project is awarded in Step 8, enabling the applicant to implement the action.

\textbf{B. The Pavilion Violates 44 C.F.R. pt. 9}

The Applicant commenced construction on the change in the scope of work before FEMA completed its review under 44 C.F.R. pt. 9. Furthermore, as detailed above, the Pavilion violates the NFIP criteria set forth at 44 C.F.R. § 60.3(e)(5) concerning the free-of-obstruction requirement, which means that the facility is “inconsistent with the criteria of” the NFIP and violates the regulation at 44 C.F.R. § 9.11(d)(6). Because the Applicant commenced construction before FEMA was able to conduct its review under 44 C.F.R. pt. 9 and the Pavilion is in violation of 44 C.F.R. § 9.11(d)(6), the project is ineligible for financial assistance.\textsuperscript{71}

\textsuperscript{67} \textit{Id.} § 9.6(b).
\textsuperscript{68} 44 C.F.R. § 9.11(a).
\textsuperscript{69} \textit{Id.} § 9.11(b)(1) and (3).
\textsuperscript{70} \textit{Id.} § 9.11(c).
\textsuperscript{71} See FEMA Second Appeal Analysis, \textit{City of Yuba City}, FEMA-1155-DR-CA, at 5 (Mar. 15, 2001) (“Because compliance with the floodplain management requirements was not done by FEMA or endorsed by FEMA before construction began, the applicant is not eligible for the cost of the hazard mitigation project.”); FEMA Second Appeal Analysis, \textit{Orleans Parish Criminal Sheriff’s Office}, FEMA-1049-DR-LA, at 3 (July 10, 2000) (“Because the applicant proceeded with the work prior to FEMA having the opportunity to complete...[the] 8-step review under Executive Order 11988), we cannot fund the requested work.”); FEMA Second Appeal Analysis, \textit{City of Fort Pierre}, FEMA-1984-DR-SD, at 4 (Dec. 17, 2012) (“Under 44 C.F.R. § 13.43(a)(2), FEMA may disallow the cost of the activities under PW 1993 for failure to comply with Executive Order 11988.”).
VII. ISSUE 4 – COASTAL ZONE MANAGEMENT ACT

A. Applicable Law and Regulations

The Coastal Zone Management Act ("CZMA") requires that federal agency actions with reasonably foreseeable effects on any land or water use or natural resource of the coastal zone be consistent, to the maximum extent practicable, with the enforceable policies of a coastal state’s federally approve Coastal Management Program. Under the National Oceanic and Atmospheric Administration’s ("NOAA") implementing regulations for the consistency requirement, there are four types of federal actions: federal agency activities, federal license and permit activities, outer continental shelf plans, and federal assistance to state and local governments. The fourth type of federal action, "federal assistance," is the one applicable to the Public Assistance Grant Program.

The NOAA implementing regulations for federal assistance actions are intended to ensure that "federal assistance to applicant agencies for activities affecting any coastal use or resource is granted only when such activities are consistent with approved management programs." In carrying out this intent, the regulation at 15 C.F.R. § 930.94 requires a state or local government (called an "applicant agency") to submit its application for federal assistance to the state agency for consistency review concerning any proposed federal assistance activity that is listed in the state’s Coastal Management Program as a type of activity that will have a reasonably foreseeable effect on any coastal use or resource and occurring within the coastal zone. If the state agency does not object to the proposed activity, then the federal agency may approve the federal assistance to the applicant agency. On the contrary, following receipt of a state agency objection, a federal agency is prohibited from providing assistance for the activity.

B. The Applicant Failed to Obtain a Consistency Determination in Violation of the Coastal Zone Management Act

The CTDEEP administers the Connecticut Coastal Management Program and is the cognizant state agency for determining whether a federal assistance activity is consistent with that Program. Recognizing that the original scope of work to replace the Pavilion implicated the Coastal Zone Management Act and the need for a consistency determination, the Record of Environmental Consideration ("REC") for Project Worksheet 680 stated that the Applicant was responsible for "coordinating and obtaining any permits from the Connecticut Department of Energy and Environmental Protection... prior to initiating work."
After receiving the request to change the scope of work for PW #680, FEMA contacted CTDEEP in June 2017 and asked whether that agency had issued a consistency determination concerning the scope of work completed by the Applicant on the Penfield Pavilion. 80 CTDEEP responded that there are “still outstanding issues with the site” because of that agency’s concerns “with the placement of fill underneath the building and parking lot which may potentially result in damage to the building from future storm events.” 81 As a result of these concerns, CTDEEP stated that “at this point we cannot say the site is consistent with our coastal policies…” 82

FEMA sent a follow-up letter to the Applicant and Grantee on July 7, 2017, that stated that FEMA was giving them until September 1, 2017, to work through issues with CTDEEP and provide FEMA with a consistency determination. 83 On the deadline, the Grantee and CTDEEP sent a letter to FEMA that did not include a consistency determination. Rather, the letter explained that “our only remaining concern centers on interpreting the free-of-obstruction requirement as per FEMA Technical Bulletin 5, which requires additional federal guidance to adequately resolve” and that the “State and municipality agreed that DEEP and DESPP/DEMHS would jointly request technical assistance from FEMA Region 1 on determining NFIP compliance of the structure.” 84 The letter concluded that “[a]ll parties are awaiting the requested technical assistance from FEMA in order that any potential compliance issues can be identified and appropriately resolved.” 85 If “FEMA determines that the structure as built meets the standards outlined in FEMA Technical Bulletin 5, the State would request that this project be determined eligible and final closeout be initiated.” 86

The Applicant did not obtain a consistency determination from CTDEEP before initiating work on the Pavilion and has not yet obtained any such determination. FEMA also understands that CTDEEP will likely not issue any consistency determination in the future because FEMA has determined that the Pavilion does not meet the free-of-obstruction requirements under 44 C.F.R. § 60.3(e)(5) and Technical Bulletin 5. Therefore, the Applicant has violated the implementing regulations for the Coastal Zone Management Act and the specific term and condition in the REC for PW #680 to obtain a permit from CTDEEP before initiating work, making this project ineligible for financial assistance.

80 Email from David Robbins, Regional Environmental Officer, FEMA Region I to David Blatt, Supervising Environmental Analyst, Connecticut Department of Energy and Environmental Protection subj: Penfield Pavilion, Fairfield (June 16, 2017).
81 Email from Jeff Catiola, Supervising Civil Engineer, Connecticut Department of Energy and Environmental Protection to David Robbins, Regional Environmental Officer, FEMA Region I subj: Penfield Pavilion, Fairfield (June 21, 2017).
82 Id.
84 Id.
85 Id.
86 Id.
VIII. ISSUE 5 – REMEDIES FOR NONCOMPLIANCE

A. Applicable Law, Regulation, and Policy

The creation of a grant relationship results in certain legal obligations that flow in both directions between a federal agency and a grantee. If a grantee does what it has committed itself to do and incurs allowable costs, the federal government is obligated to pay. Conversely, the federal government has a right to expect that the grantee will use the grant funds only for authorized grant purposes and in accordance with the terms and conditions of the grant.\(^{87}\) It is well established that Congress can attach terms and conditions to the availability or receipt of grant funds, either in the grant legislation itself or in a separate enactment.\(^{88}\) and that federal grantor agencies such as FEMA may structure specific conditions applicable to a specific grant or portion of work under a grant (such as a Public Assistance project) to comply with various cross-cutting laws and regulations. The right of the grantor agency to oversee the expenditure of funds by the grantee to ensure that the money is used only for authorized purposes and in compliance with all terms and conditions are so fundamental that they are not dependent on specific legislation.\(^{89}\)

Consistent with its broad discretion to provide financial assistance and pursuant to its fundamental authority to oversee the expenditure of federal funds, FEMA has broad authority to take remedies for noncompliance with respect to a Public Assistance project if the grantee and/or applicant materially fails to comply with any term or condition of the award. The regulation at 44 C.F.R. § 13.43 specifically authorizes FEMA to take a remedy that is “appropriate in the circumstances,” with termination and disallowance of funding as available options.\(^{90}\) In determining an appropriate remedy, FEMA will analyze factors that represent concern for both mitigating circumstances and aggravating circumstances.\(^{91}\)

B. FEMA Is Terminating PW #680 and Disallowing All Costs

I have evaluated the facts and circumstances of this project, considered aggravating and mitigating circumstances, and, after this analysis, determined to terminate PW #680 and disallow all costs pursuant to 44 C.F.R. § 13.43. First, the Applicant has materially failed to comply with the terms and conditions of the Public Assistance grant for FEMA-4087-DR by pursuing a change in the scope of work without FEMA approval in violation of 44 C.F.R. § 13.30(d) and PW #680 and before FEMA could complete EHP review. Second, the work completed by the Applicant is ineligible for financial assistance. This is because the Pavilion violates the regulations at 44 C.F.R. § 60.3(c)(5) and 44 C.F.R. § 9.11(d)(6) in light of the horizontal grade beams being above the natural grade and below the BFE. It is also because the Applicant failed to afford FEMA the opportunity to comply with NEPA, 44 C.F.R. pt. 9, and any other applicable

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\(^{89}\) See B-203681 (Comp. Gen. 1985); B-198493 (July 7, 1980); see also 18 Op. Off. Legal Counsel 74, 76 (1994).

\(^{90}\) 44 C.F.R. § 13.43(a); see also FEMA Second Appeal Analysis, Township of Rapidan, FEMA-1941-DR-MN (Sep. 14, 2016).

\(^{91}\) See FEMA Second Appeal Analysis, City of Milford, FEMA-4023-DR-CT (May 18, 2018).
EXHIBIT #15

EHP requirements before the Applicant initiated the work and the Applicant failed to obtain a CZMA consistency determination from CTDEEP.\textsuperscript{92} These severe violations also frustrate the underlying purpose of this project award, which was to restore the Pavilion in a manner that ensured that protection of the facility and people from the risk of flooding and the protection of environmental resources.

Third, the Applicant and Grantee also disregarded FEMA's warning about continuing to pursue the revised scope of work before FEMA review and approval. In its letter of August 9, 2016, FEMA made very clear to both the Grantee and Applicant that they should carefully consider whether the Applicant should continue performing its construction of the Pavilion, as such work could compromise future eligibility.\textsuperscript{93} The Applicant disregarded this warning and moved forward to complete construction in full knowledge of the potential consequences, which does not demonstrate a good faith effort to comply with the relevant legal requirements and the terms and conditions of the Public Assistance award. This was also a very significant decision because it precluded the ability for FEMA, Grantee, and Applicant to work together to revise the project design to bring it into compliance with 44 C.F.R. § 60.3(e)(5), 44 C.F.R. § 9.11(d)(6), and the terms and conditions of PW #680 and enable FEMA to complete the necessary EHP reviews before the Applicant moved forward.

Lastly, termination of the project and disallowance of all costs is well within the bounds of discretion set forth at 44 C.F.R. § 13.43. There are, of particular note, numerous Public Assistance second appeal decisions issued by the FEMA Office of Response and Recovery upholding the full or partial termination of a project based on an unapproved change in the scope of work.\textsuperscript{94}

IX. PUBLIC ASSISTANCE DETERMINATION: □ Approved    □ Partial    ☒ Denied

The Applicant and Grantee materially failed to comply with the terms and conditions of PW #680 and constructed the Pavilion in violation of federal law, regulation, and FEMA policy. FEMA was also unable to complete EHP review before the Applicant completed the work and the Applicant never obtained a CZMA consistency determination from CTDEEP. Therefore, FEMA is terminating this project in full and disallowing all costs.

\textsuperscript{92} FEMA Second Appeal Analysis, City of Sundance, FEMA-4007-DR-WY (May 4, 2018) (finding a project ineligible because the Applicant did not notify FEMA of the change to the SOW until after it completed the work).

\textsuperscript{93} See supra note 17.

\textsuperscript{94} See, e.g. FEMA Second Appeal Analysis, Webster County, FEMA-4144-DR-MO (June 8, 2018) (FEMA terminated a project where the applicant pursued an unapproved scope of work to increase the length and width of a bridge); FEMA Second Appeal Analysis, Roseau County Highway Department, FEMA-1288-DR-MN, at 7 (Jan. 6, 2017) (FEMA denied funding for work performed outside of the approved scope); FEMA Second Appeal Analysis, City of Sundance, FEMA-4007-DR-WY (May 4, 2018) (FEMA terminated a project where the applicant pursued a change in the scope of work without prior FEMA approval); FEMA Second Appeal Analysis, Plymouth Township, FEMA-4030-DR-PA (June 20, 2017) (FEMA terminated a project because the applicant completed work beyond the scope of work in the PW without prior FEMA approval); FEMA Second Appeal Analysis, Maine-Endwell Central School District, FEMA-4031-DR-NY (Dec. 21, 2017) (FEMA terminated a project because the applicant pursued a change in the scope of work by constructing a new facility at a different location without prior FEMA approval).
EXHIBIT #15

APPROVALS

APPROVED:

GEORGE F VANDERSCHMIDT

Digitally signed by GEORGE F VANDERSCHMIDT
Date: 2018.11.28 15:05:26 -05'00'

G. Fred Vanderschmidt
Disaster Recovery Manager
FEMA-4087-DR-CT

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<td>Drawings/Sketches</td>
<td>Drawing of Damaged Footing Area</td>
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<td>UPS Confirmation Michelangelo</td>
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<td>FINAL 4087-DR-CT Fairfield PW #680 SOW Change CZMA and State Law Issues RFI (7 July 2017).pdf</td>
<td>Additional Damages Document</td>
<td>RFI Re: Requesting information concerning whether the project was consistent with the State’s coastal management program, which is a requirement of the Coastal Zone Management Act. Final RFI as this information was requested in Sept. 30 2016 RFI.</td>
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<td>Appraisal and Assessment Values for 2015</td>
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<td>Floodplain</td>
<td>NFIP Determination - Noncompliance with Minimum Floodplain Management Criteria at 44 CFR 60.3</td>
</tr>
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</table>
January 18, 2019

Mr. Joseph Michelangelo, P.E.
Director of Public Works
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

Re: Penfield Pavilion – Repair and Reconstruction (Project Worksheet # 680)
323 Fairfield Beach Road, Fairfield, CT
First Appeal – FEMA Determination of Violation of NFIP

Dear Mr. Michelangelo,

As requested, I am responding to the determination letter authored by Richard Nicklas from FEMA Region 1 office, dated November 28, 2018. Mr. Nicklas’ determination was that the Penfield Pavilion does not comply with the minimum floodplain management criteria set forth in Federal Regulations (44 CFR 60.3). Specifically, Mr. Nicklas reached a conclusion that foundation grade beams beneath the west wing of the building are “above the natural grade” in reference to FEMA’s Technical Bulletin 5 “Free of Obstruction Requirements”.

It was for the sole reason of Mr. Nicklas’ finding that grade beams are “above the natural grade” on which he based his decision that a violation of the 44 CFR 60.3 had occurred. Mr. Nicklas has treated the wording of one paragraph in TB 5 as a default violation of 44 CFR 60.3, independent of a finding of whether the free flow of flood waters has been restricted. This is despite the Town having furnished engineering reports that clearly substantiated, without challenge from Mr. Nicklas, that the free flow of flood waters would not be restricted, and that the building and its foundations would safely sustain the flood flows, pressures, impacts, velocities, and uplift forces associated with a Base Flood, as well as the effects of scour and erosion.

Further, the metric Mr. Nicklas uses for arriving at this default violation is unsound. He has defined “natural grade” using modern topographic surveys of a portion of Penfield Beach long disturbed by man and nature alike. By no common-sense interpretation could one call a recent survey of a developed site – a sandy beach no less – as representative of the “natural grade”. The Town defined natural grade by interpolation between the primary dune profile at each end of the project area. In layman’s words, the Town drew a straight line between Point A and Point B. The Town’s definition is sound, logical, and entirely consistent with TB 5.

One also can question whether TB 5, a document stated to be a policy guideline, carries the same weight as Federal law enacted by Congress, since neither TB5 nor the issues that the violation are based upon are addressed in 44 CFR 60.3.
In light of the above, we have concluded that Mr. Nicklas’ determination of violation is unsubstantiated, based on data not representative of natural conditions, and is contrary to – not supported by – TB 5. The Town has demonstrated, as reiterate herein, that the grade beams supporting the Penfield Pavilion are in fact at or below natural grade, that the free flow of flood waters under the building are not restricted, that the building and its foundations can safely resist flood forces with erosion and scour accounted for, and that the project conforms to the requirements of the NFIP.

We offer the following points in support of the Town’s first appeal:

**Point 1: “Natural Grade” is not defined in Technical Bulletin 5. The Town’s definition is consistent with TB 5.**

Neither 44 CFR 60.3 nor TB 5 go into any detail to define “natural grade” and how to measure it. This left the Town to read and interpret the TB 5 guideline as it was written in plain English. “Natural” means natural.

Since 1900, Penfield Beach has been heavily developed with multiple buildings built, demolished, and rebuilt. There has also been at least a dozen named coastal storms and hurricanes in that timeframe, and the beach has been repaired, nourished, and regraded many times. The Town therefore determined, logically, that post-1900 survey data would not be a reliable means by which to determine natural grade of the site where the building occurs. Pre-1900 topo maps don’t exist. The Town defined natural grade using the topography of the primary dune system at the two ends of the site where the dune profile was not altered by prior development, and outside of the limits of the parking lot and the Pavilion construction. To the east is the area known as Rickard’s Beach, which is a vegetated dune. To the west is the Durrell Pavilion, which is developed with buildings and a driveway, but outside of the pavilion parking lot and consistent with the profile of the Rickard’s Beach dune. The Town then connected Point A (Rickard) to Point B (Durrell) with straight lines to establish the average grade under the Pavilion building for the purpose of establishing grade beam elevation. This is a sound and logical approach to comply with TB 5.

Mr. Niklas defines natural grade as the pre-event (Superstorm Sandy) grades on the property, using recent topographic surveys. Such a definition is inherently illogical, and technically unsound. He concludes that “natural grade” elevation varied between 8 and 9 NAVD based on survey data. He does not take into account the effect that prior development – specifically the building - had on the natural grades. When the “old” building was demolished and (in 2 phases, 2007 and 2010) replaced by new construction, the grade under the building was lowered to 8.0’ NAVD to allow for the floor construction of the building, which had a finish floor elevation of 10.9’ NAVD. **THE GRADE ELEVATION UNDER THE PRE-SANDY BUILDING WAS NOT THE NATURAL GRADE ELEVATION OF THIS PORTION OF THE SITE.** The natural grade would have been the continuous dune with crest elevation 11.0’ NAVD. The Penfield project filled in the breach in the dune caused by prior development of the site and the effects of Superstorm Sandy.

The Penfield Site is a beach. It is a dynamic landform. It is inaccurate and misleading to use modern topographic maps of a site that has long been disturbed, developed, modified, re-graded, scoured, replenished, and covered over with buildings for 100 years. Such an analysis paints a false picture of what the natural conditions are.

The following page shows a color markup of the As-Built survey which was performed after the Penfield project was completed in 2017. The markup, made by DeStefano & Chamberlain for the purposes of this letter, shows the natural grade contours which were established by the Town using the criteria of connecting existing topography at both ends of the disturbed building area, using the primary dune as the natural grade benchmarks. The Town concluded that the average natural grade under the pavilion was 10.7’ NAVD. The tops of the grade beams are flush with this natural grade elevation.

**DeStefano & Chamberlain Incorporated**
Mr. Nicklas contends that there is no evidence to suggest the dune ever was continuous under the building, however old photographs, which were included in the Town’s prior response, support this. The photo below taken from the archives of the Fairfield Historical Society shows the “old” pavilion building as it appeared in 1976, looking southwest:

The current building is in the same position on the site as this “old” building was. Notice that the dune is a continuous elevation across the width of the site, and the building is perched up on the crest. Mr. Nicklas rejected this photographic evidence along with other historical photos furnished by the Town, because the photos didn’t contain topographic benchmarks in them.

The use of non-structural fill on the property has since been accepted by FEMA by virtue of the fact that it is not cited in the determination of violation, which suggests FEMA does view the site grades as consistent with natural conditions.

**Point 2: The Town has demonstrated the project will not impact the “free flow of flood waters”**

Mr. Nicklas acknowledges receipt of engineering reports from RACE Coastal Engineers and DeStefano & Chamberlain, Inc. that have, respectively, calculated the appropriate flood forces and certified that the foundations can resist these forces. Further, the Flood Impact Analysis performed by RACE has demonstrated that there are no adverse impacts, such as redirection, reflection, or increased wave heights on adjacent structures or properties. Mr. Nicklas does not refute the engineering documentation presented, so we can only assume he accepts it.

It is worth repeating the section from the DeStefano & Chamberlain report:

*It is our reading of Technical Bulletin #5 that grade beams are a permissible obstruction regardless of their elevation, because they can become exposed by scour whether embedded in fill or in existing soils. Technical Bulletin #5 recognizes this: “Designers must anticipate this circumstance and design grade beams to resist flood, wave, and debris loads and to remain in place when undermined”. Grade beams were utilized to avoid the need for cross bracing and facilitate the re-support and connection of the existing building on the new foundation. Minimizing cross bracing is an encouraged practice in TBS5 to reduce permitted obstructions.*

*Technical Bulletin #5 provides no guidance on how to measure “Natural grade” on an erodible site. It would be unrealistic to think that a grade beam could be buried enough below the beach level to never*
become exposed by scour. When one considers the realities of constructing a foundation in loose sand below tidal water levels, it becomes a necessity in many cases to build high not low. The depth of grade beam is mitigated with a pile foundation system which provides support for the building before during and after any scour.

Wave pressures acting on the grade beams were calculated by RACE in their Flood Impact Analysis as follows:

<table>
<thead>
<tr>
<th>Summary:</th>
<th>100–Yr Return Period</th>
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<tbody>
<tr>
<td>Methodology</td>
<td>Direction</td>
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<tr>
<td>DOT, 1% Wave</td>
<td>Horizontal</td>
</tr>
<tr>
<td>DOT, 1% Wave</td>
<td>Vertical</td>
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</table>

We have performed structural calculations to verify that the grade beams can resist these loads in combination with hydrostatic pressure, wind, and gravity loads. We can certify that the foundation system can safely resist flood depths, pressures, velocities, impact, and uplift forces associated with the Base Flood in the VE 13’ Zone based on these calculated pressures.

The Town has satisfied the intent – and letter - of the only paragraph in TB 5 addressing grade beams, by providing detailed engineering analysis in support of the design of the Penfield Pavilion. The Town has further proved thru this analysis that the grade beams will not reduce or impact the free flow of flood waters under the building, which is, after all, the driving purpose of Technical Bulletin 5 in the first place.

The Penfield site is expansive, and the closest structure is at least 300 ft away. Adjacent structures are typically regarded as closely spaced residential buildings as seen elsewhere along Fairfield Beach. Notwithstanding the analysis and conclusions of RACE, clearly a 300 ft separation is far enough away for the Pavilion to have negligible impact on wave forces or water depths.

There is a space of 2.38 feet between bottom of structure (el. 13.08’ NAVD) and grade under the building (el. 10.7’ NAVD). TB5 recognizes that a 2 ft clearance is sufficient to allow waves to dissipate under the building, and states that no further analysis is necessary, although the analysis and conclusions of RACE confirm that this space is sufficient for the free flow of flood waters.

Point 3: TB 5 never states that grade beams set above “natural grade” is a default violation of 44 CFR 60.3.

Although the Town does not accept Mr. Nicklas’ determination that the grade beams are above natural grade, such a scenario would still not constitute a default violation of the NFIP. Technical Bulletin 5, contains only one 1 paragraph out of the 32-page document, which discusses grade beams, repeated here:

Grade beams typically are made of reinforced concrete or wood; they are used to tie together the foundation piles or columns to provide additional lateral support. Grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP. However, storm erosion and local scour will often expose and undermine grade beams, leaving them suspended above the post-storm ground profile. Designers must anticipate this circumstance and design grade beams to resist flood, wave, and debris loads and to remain in place and functional when undermined (see Figure 8). Grade beams also must be designed and constructed so that the vertical thickness is minimized, thereby reducing the lateral flood, wave, and debris loads acting on the beam and limiting the transfer of these loads to the foundation. Designers are cautioned
that grade beams should not be used as a substitute for adequate number, size, and embedment of piles or columns.

Nowhere in the above paragraph is it stated that grade beams with their upper surfaces set above “natural grade” is a default violation by itself. However, Mr. Nicklas has treated them as such in rendering his decision. TB 5 clearly describes a concern for scour and erosion which will expose the grade beams to collect loads from flooding, and that “Designers must anticipate this circumstance and design grade beams to resist flood, wave, and debris loads and to remain in place and functional when undermined”. Such steps were taken by the Town as described in the prior response, and repeated in Point 2.

Point 4: Technical Bulletin 5 is a guideline, not an absolute.

TB 5 is a guideline meant to help builders and designers understand the flood regulations adopted by NFIP communities and how FEMA currently interprets them. It is not meant to supplant the professional expertise of licensed design professionals (coastal, geotechnical, and structural engineers) and municipal land use officials trained in best practices and knowledgeable in local conditions. Note the following language:

The NFIP Technical Bulletins provide guidance on the minimum requirements of the NFIP regulations. . . . The bulletins are intended for use by State and local officials responsible for interpreting and enforcing the requirements in their floodplain management regulations and building codes, and by members of the development community, such as design professionals and builders. . . . The bulletins do not create regulations; rather, they provide specific guidance for complying with the requirements of existing NFIP regulations.

TB 5 is just that - important and useful guidance - but is not law, and not intended to replace the Federal Regulations, nor create law.

Point 5: Grade beams are not mentioned, regulated, or addressed in any manner in 44 CFR 60.3.

It is unclear how the Town can be held in violation of 44 CFR 60.3, with respect to the sole issue of the determination violation of the NFIP - grade beams - when 44 CFR 60.3 never mentions them. The terms “grade beams” and “natural grade” never appear in the federal regulations, only in Technical Bulletin 5.
CLOSING

We hope this response, and our prior ones, provide sufficient information to demonstrate that the existing Pavilion project as constructed does not create an impermissible obstruction, allows for the free flow of flood waters under the building, will safely resist all calculated flood forces, and will perform in a manner that is consistent with the requirements and intent of the National Flood Insurance Program. We believe we have demonstrated that, contrary to the determination made by Mr. Nicklas, the grade beams are placed at or below the natural grade and that the project conforms to the Technical Bulletin 5 guideline as well as the enabling Federal regulations 44 CFR 60.3.

I would be happy to discuss further any of these points or respond to any questions or additional concerns.

Sincerely,

[Signature]

Kevin H. Chamberlain, P.E., SECB

cc: file
December 1, 2017

Mr. Joseph Michelangelo, P.E.
Director of Public Works
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

Re: Penfield Pavilion – Repair and Reconstruction
323 Fairfield Beach Road, Fairfield, CT

Dear Mr. Michelangelo,

As requested, I am responding to the concerns raised in the determination letter authored by Richard Niklas from FEMA Region 1 office, dated October 17, 2017. This letter was in response to information provided by the Town of Fairfield in October 2016, in response to Mr. Niklas’ prior letter dated August 9, 2016.

As you know, the subject project is the now completed repair and reconstruction of the Penfield Pavilion facility, which received a Certificate of Occupancy in January 2017. FEMA contends that the design and construction of the project violates the National Flood Insurance Program. They cite two features of the project – fill and grade beams - as “impermissible obstructions”, which would violate the “Free of Obstruction” requirements of 44 CFR 60.3(e)(5), and FEMA Technical Bulletin #5.

In addition to the following response, the Town of Fairfield has engaged RACE Coastal Engineering to perform a Flood Impact Analysis of the as-built conditions. Their report is provided under separate cover. The Town has also prepared a 0.5 foot interval contour map using 2006 LiDAR data, and compiled historical photographs of the site from the archives of the Fairfield Historical Society.

B. The Use of Major Quantities of Fill Has Created Impermissible Obstructions Below the Lowest Floor of the Pavilion in Violation of 44 C.F.R. § 60.3(e)(5)

We disagree with this interpretation of the site grades and the project’s effect on them. We can demonstrate that the as-constructed project grades are consistent with the surrounding topography.

We can break down the response as follows:
“... the Town has not provided sufficient data to support its own conclusion of the pre-disaster natural grade elevation ... I have concluded that ... the pre-existing natural grade of the project site was 8.0’ NAVD ...

With this response please find additional topographic data. Using the same 2006 LiDAR data that the writer did, a 0.5 ft interval contour map was plotted by the Town of Fairfield Engineering Department in NAVD datum, and is provided as an attachment.

Contour intervals of 2 ft, cited by the writer, are not detailed enough of a study. The site is not flat, and the finish grades pitch across the width of the building. The writer’s approach of using the elevation 8.0 contour line along the eastern edge of the building underestimates pre-construction grades. Grades across the width of the building vary from 8.0 along its eastern edge to 10.0 along its western edge. This brings the average grade across the building footprint to 9.0’ NAVD.

“FEMA generally considers the placement of up to 2 feet of fill under or around an elevated building to be acceptable; however, in this case, the Town has used up to 4 feet of fill beyond the natural grade when restoring the pavilion. ... FEMA has ... concluded that the final fill configuration is not similar to the grades and slopes in the immediate vicinity of the Pavilion ...

The development of this site dates to the early 1900s, and pre-dates any detailed contour maps. To understand the historical context, the Town Planner has compiled historical photos of the site from the archives of the Fairfield Historical Society. They are provided with this response under separate cover. The photos show a continuous dune along the length of the site with the former building at the crest. From both the 2006 LiDAR data and the 2017 as-built survey, the dune crest elevation at the two ends of the building can be seen as 10.0’ to 11.0’ NAVD. Based on the photographs, the LiDAR data and the as-built survey, it is our opinion that it is reasonable and logical to infer that this crest elevation would have continued across the entire length of the site in the property’s “natural” state.

The sandy barrier beach on this site is a dynamic land form. The finish grade of loose beach sand is not a fixed surface, sand shifts from with recreational use and regular grooming, from the effect of daily tide cycles, and from major impacts due to periodic hurricane activity and replenishment. For this reason it is our professional opinion that average depth of fill over areas of interest should be compared rather than localized peaks and valleys.

A detailed comparison was made of pre and post development grades both across the entire property and in the building vicinity. Our office prepared a 3D Building Information Model (BIM) of the two topographic surfaces using Autodesk’s Revit. A 3D image of the grade surface comparison is attached to this response. The results of this grade modeling are as follows:

For the entire 4.5 acre Town-owned property, 2006 versus 2017:
- Footprint: 199,693 square feet
- Net cut/fill: +195,755 cubic feet
- Net average grade change: +0.98 feet

For a 150’x400’ rectangle that includes the building and immediate vicinity, 2006 versus 2017:
- Footprint: 60,000 square feet
- Net cut/fill: +101,572 cubic feet
- Net average grade change: +1.69 feet
For only the building (enclosed space, porches, decks, stairs, and ramps), 2006 versus 2017:
- Footprint: 24,357 square feet
- Net cut/fill: + 44,657 cubic feet
- Net average grade change: 1.83 feet

The total volume of the concrete grade beams within the fill is approximately 10,000 cubic feet. This volume is included in the numbers above.

In comparing pre and post construction grades:

- The fill meets existing grade at the two narrow ends (north and south) of the building. Finish grade in the range of 10.0 to 11.0’ NAVD.
- The edge of fill along the east (water) side of the building blends with the post-Sandy beach grades. As noted in the RACE report, the beach has steepened between 2006 and 2017 data, but due to storm activity and the resulting replenishment and nourishment efforts conducted by the Town, not due to construction activity associated with the building. No fill was placed seaward of the contractor’s construction fence. The building areas continues the slope of the beach up to the building and then finish grade levels off.
- The edge of fill along the west (parking lot) side of the building meets the grade of the former berm which was removed to allow the building to be moved and lifted. The new segmental retaining wall, discussed later in the report, was constructed in response to the removal of the berm.

“The Town, furthermore, did not provide any analysis as to whether the fill would not divert water to adjacent properties and would not cause damage to the underside of the Pavilion during flood events.”

The Town has engaged RACE Coastal Engineers to perform the engineering analysis, and their report is provided under separate cover.

C. The Placement of a Grade Beam Above the Natural Grade Has Created an Impermissible Obstruction Below the Lowest Floor of the Pavilion in Violation of 44 C.F.R. § 60.3(e)(5)

It is our reading of Technical Bulletin #5 that grade beams are a permissible obstruction regardless of their elevation, because they can become exposed by scour whether embedded in fill or in existing soils. Technical Bulletin #5 recognizes this: “Designers must anticipate this circumstance and design grade beams to resist flood, wave, and debris loads and to remain in place when undermined”. Grade beams were utilized to avoid the need for cross bracing and facilitate the re-support and connection of the existing building on the new foundation. Minimizing cross bracing is an encouraged practice in TB5 to reduce permitted obstructions.

Technical Bulletin #5 provides no guidance on how to measure “Natural grade” on an erodible site. It would be unrealistic to think that a grade beam could be buried enough below the beach level to never become exposed by scour. When one considers the realities of constructing a foundation in loose sand below tidal water levels, it becomes a necessity in many cases to build high not low. The depth of grade beam is mitigated with a pile foundation system which provides support for the building before during and after any scour.
Wave pressures acting on the grade beams were calculated by RACE in their Flood Impact Analysis as follows:

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Direction</th>
<th>Load</th>
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<td>Horizontal</td>
<td>394</td>
</tr>
<tr>
<td>DOT, 1% Wave</td>
<td>Vertical</td>
<td>261</td>
</tr>
</tbody>
</table>

We have performed structural calculations to verify that the grade beams can resist these loads in combination with hydrostatic pressure, wind, and gravity loads. We can certify that the foundation system can safely resist flood depths, pressures, velocities, impact, and uplift forces associated with the Base Flood in the VE 13' Zone based on these calculated pressures.

**SITE RETAINING WALL**

The letter also references the presence of a new retaining wall which was constructed to separate the building from the parking lot. The RACE engineering analysis reviews the effect of the retaining wall on wave height. A few important points:

Previously, the site had a large earthen berm in front of the building and this wall serves to retaining the grades where the berm was removed, and facilitate handicapped access to the building. The wall and the backfill behind it take up less cubic volume than the berm previously did.

The retaining wall is a segmental retaining wall, or modular block wall. The wall is constructed with hollow concrete blocks stacked dry and pinned together. One course of geosynthetic mesh is laid into the joints of the wall near the top. The geosynthetic grid mobilizes the mass of soil backfill to create a gravity retaining wall out of the combined earth and masonry. The maximum wall height is 2.5 feet. There is no parapet - finish grade is approximately flush with the top cap stone.

Under stillwater flooding and low energy storms, flood waters inundating the site from Long Island Sound will sheet flow under the building and overtop the retaining wall without impediment.

Under wave action, RACE has calculated a maximum scour depth of 4 inches at the back face of the wall. Such minimal exposure will have negligible effect on the stability of the wall and reinforced backfill wedge behind it.

Note that due to the manner in which a segmental retaining wall is designed and built, it cannot become a flood barrier like a solid concrete wall might. As each course of blocks becomes exposed on both faces, the blocks will be dislodged by wave pressure and safely sink to the ground - they do not become projectiles. The blocks are pinned together but not glued or mortared so the wall is not impervious to waves and water.
CLOSING

We hope this response provides sufficient information to demonstrate that the existing Pavilion project as constructed will not create an impermissible obstruction, will safely resist all calculated flood forces, and will perform in a manner that is consistent with the requirements and intent of the National Flood Insurance Program. We believe we have demonstrated that the fill that was placed on site is consistent with the adjacent topography. The Flood Impact Analysis performed by RACE Coastal Engineers, under separate cover, we believe also demonstrates that the project will not cause any adverse impacts on the subject building or adjacent structures.

I would be happy to discuss further any of these points or respond to any questions or additional concerns.

Sincerely,

Kevin H. Chamberlain, P.E., SECB

cc: file
Brown surface is where 2017 grades are higher than 2008 grades

Red surface is where 2017 grades are lower than 2008 grades

Colored area is the 4.5 acre Penfield property.

Data used:
2017 as-built survey, 1.0 ft contours, NAVD datum
2008 LIDAR data, 0.5 ft contours, NAVD datum

PENFIELD PAVILION
323 Fairfield Beach Road, Fairfield, CT 06824

GRADE COMPARISON
Project # 14-796
Dat 12-1-2017
Drawn by KAP
Checked by KHC
December 1, 2017

Mr. Joseph Michelangelo, P.E.
Director of Public Works
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

Attention: Joseph Michelangelo, P.E.
Director of Public Works
JMichelangelo@Fairfieldct.org

Reference: Penfield Pavilion – Repair and Reconstruction
323 Fairfield Beach Road, Fairfield, CT

Dear Mr. Michelangelo:

RACE COASTAL ENGINEERING ("RACE") has prepared the attached Flood Impact Analysis of the existing, “as-built” conditions at the Penfield Pavilion per our Agreement for Design Professional Services dated October 25, 2017. The analysis was prepared to address the concerns outlined by FEMA in their October 17, 2017 letter to the State of Connecticut that the existing fill and grade beam conditions at the Penfield Pavilion are not in compliance with FEMA’s “free of obstruction” requirements under Title 44 of the Code of Federal Regulations Section 60.3(e)(5) (44 CFR Section 60.3(e)(5)).

44 CFR Section 60.3(3)(5) states:

"Provide that all new construction and substantial improvements within Zones V1-30, VE, and V on the community’s FIRM have space below the lowest floor either free of obstructions or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation systems..."

FEMA’s Free-of-Obstruction Requirements for Buildings Located in Coastal High Hazard Areas in accordance with the National Flood Insurance Program – Technical Bulletin 5 (Aug. 2008) states the following in regards to the free-of-obstruction requirement:

"...it is not always clear whether a particular building element or site development practice will be a significant obstruction that prevents the free passage of floodwaters and waves. The term “significant” is used here because any construction or development practice below the flood level will cause a localized disruption of flow and waves during the base flood."

RACE has performed a wave crest, runup, erosion, load, and reflection analysis as part of the Flood Impact Analysis Task using methodologies outlined in FEMA’s Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update (February 2007), the U.S. Army Corp of Engineer’s (USACE’s) Coastal Engineering Manual (April 2002), and the USACE’s Shore Protection Manual (1984). These analyses were performed...
to determine whether the fill, grade beams or retaining wall would divert water to adjacent properties or cause damage to the underside of the Pavilion structure during the base flood event and to determine if these elements are consistent with the floodplain management criteria of 44 CFR 60.3(e)(5).

A brief summary of each of the analyses performed is given below:

1. **Wave runup** – The runup analysis showed there is a slight increase in runup in the post-construction case when compared to the pre-construction case which is based on 2006 LiDAR data. This increase can be attributed to the change in the cotangent of the beach slope which is likely a result of wave action rather than the Pavilion construction. It is the opinion of RACE that the “as-built” conditions do not directly attribute to the increase in wave runup.

2. **Wave crest** – The wave crest analysis showed that “as-built” conditions resulted in a decrease in wave crest elevation when compared to the pre-construction conditions.

3. **Erosion** – The erosion analysis showed that both the pre-construction and “as-built” beach and dune conditions are erodible. The anticipated scour depth at the grade beams is 2.5 feet. The anticipated scour depth on the waterward side of the retaining wall is 0.3 feet. Pre- and post-construction scour is of similar magnitude. It is not anticipated that the new building will increase erosion on site.

4. **Load** – Wave loads were calculated on the grade beams using the methodology outlined in U.S. Dept. of Transportation Federal Highway Administration Hydraulic Engineering Circular No. 25, Highways in the Coastal Environment, Publication FHWA-NHI-07-096, June 2008. Wave loads are summarized below:

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Direction</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, 1% Wave</td>
<td>Horizontal</td>
<td>394</td>
</tr>
<tr>
<td>DOT, 1% Wave</td>
<td>Vertical</td>
<td>261</td>
</tr>
</tbody>
</table>

Please note that these loads are not factored and hydrostatic and buoyant loads are not included above.

5. **Reflection** – The reflection analysis showed that there was less than a 0.01-foot increase in wave height at adjacent buildings off of the grade beams. The reflection analysis also demonstrated that reflected waves off of the retaining wall and fill would be at least 1-foot less than the design wave.

Additionally, at your request, RACE has reviewed how the existing fill ties into adjacent grade. Per the 2006 0.5-foot contour drawing prepared by the Town of Fairfield Engineering Department, it is evident that there is a dune to the north and south of the Pavilion structure and the area where the 2006 Pavilion structure was located was a low spot. Per the USACE’s *Coastal Engineering Manual* (April 2002) Section V-4-1-c-3, dune elevation and the continuity of the dune “line” are important factors in determining a level of protection to property and infrastructure landward of the dune. As such, and since the enclosed analysis demonstrates that it will not adversely impact adjacent properties, RACE recommends that the existing fill remain in order to prevent a low point in the dune system. This will allow for a greater level of protection for landward properties and will decrease the risk of channelization through the site.
It is the opinion of RACE that if the building has been designed to be stable accounting for the loads and scour depths discussed above then the fill, grade beam and retaining wall under the building will not divert water to adjacent properties and will not cause damage to the underside of the Pavilion structure during flood events. As such, these elements should not be considered “significant” obstructions and are consistent with the floodplain management criteria of 44 CFR 60.3(e)(5).

These assessments reflect the opinion of professional engineers, with extensive experience in coastal analysis and the design and assessment of coastal structures. The opinions of RACE are based upon the drawings and documents that were prepared and provided by others. Should you have any questions, please contact the undersigned at 203-377-0663.

Very truly yours,

RACE COASTAL ENGINEERING

Azure Dee Sleicher, PE
Manager of Coastal Engineering

Copy: Kevin Chamberlain, PE, SECB
DeStefano & Chamberlain, Inc.

Enclosures: Flood Impact Analysis – Calculation Package
I) **Purpose:** To review the Penfield Pavilion for consistency with the minimum floodplain management criteria at 44 C.F.R. 60.3 and Technical Bulletin 5 including:

a. Investigate whether the fill, grade beam and retaining wall under the building would divert water to adjacent properties and would not cause damage to the underside of the Pavilion structure during flood events.

II) **Background Information:** Pre- and post-pavilion construction data was gathered from others to compare the two conditions:

<table>
<thead>
<tr>
<th>Data</th>
<th>Pre-Construction</th>
<th>Source</th>
<th>Post-Construction</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWL</td>
<td>10.1 ft (NAVD88)</td>
<td>FIS 09001CV001C 10/16/13 Transect 43</td>
<td>10.1 ft (NAVD88)</td>
<td>FIS 09001CV001C 10/16/13 Transect 43</td>
</tr>
<tr>
<td>Hₚ₀</td>
<td>12.85 ft</td>
<td>Backup data for FIS 09001CV001C Transect 43</td>
<td>12.85 ft</td>
<td>Backup data for FIS 09001CV001C Transect 43</td>
</tr>
<tr>
<td>Tₚ</td>
<td>5.92 sec</td>
<td>Backup data for FIS 09001CV001C Transect 43</td>
<td>5.92 sec</td>
<td>Backup data for FIS 09001CV001C Transect 43</td>
</tr>
<tr>
<td>Effective</td>
<td>0.044</td>
<td>2006 LiDAR Data</td>
<td>0.053</td>
<td>As-built Survey 1-11/17</td>
</tr>
<tr>
<td>Slope, m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade at</td>
<td>9.6 ft ± (NAVD88)</td>
<td>2006 LiDAR Data</td>
<td>10.7 ft ± (NAVD88)</td>
<td>As-built Survey 1-11/17</td>
</tr>
<tr>
<td>Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td>1 ft</td>
<td>FIS 09001CV001C 10/16/13 Transect 43</td>
<td>1 ft</td>
<td>FIS 09001CV001C 10/16/13 Transect 43</td>
</tr>
</tbody>
</table>

III) **Runup Calculation:** Wave runup was calculated with ACES Version 4.03's *Irregular Wave Runup on Beaches* application. The runup results are shown below:

<table>
<thead>
<tr>
<th>Deepwater significant wave height:</th>
<th>12.85 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak energy wave period:</td>
<td>5.92</td>
</tr>
<tr>
<td>Cotangent of beach slope:</td>
<td>22.78</td>
</tr>
<tr>
<td>Maximum wave runup:</td>
<td>7.44 ft</td>
</tr>
<tr>
<td>Runup exceeded by 2% of runups:</td>
<td>6.52 ft</td>
</tr>
<tr>
<td>Average of highest 1/10 of runups:</td>
<td>6.95 ft</td>
</tr>
<tr>
<td>Average of highest 1/3 of runups:</td>
<td>5.00 ft</td>
</tr>
<tr>
<td>Average wave runup:</td>
<td>3.25 ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deepwater significant wave height:</th>
<th>12.85 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak energy wave period:</td>
<td>5.92</td>
</tr>
<tr>
<td>Cotangent of beach slope:</td>
<td>18.98</td>
</tr>
<tr>
<td>Maximum wave runup:</td>
<td>8.53 ft</td>
</tr>
<tr>
<td>Runup exceeded by 2% of runups:</td>
<td>7.54 ft</td>
</tr>
<tr>
<td>Average of highest 1/10 of runups:</td>
<td>6.89 ft</td>
</tr>
<tr>
<td>Average of highest 1/3 of runups:</td>
<td>5.68 ft</td>
</tr>
<tr>
<td>Average wave runup:</td>
<td>3.68 ft</td>
</tr>
</tbody>
</table>

**Pre-Construction Runup Results**

There is a slight increase in runup in the post-construction case when compared to the pre-construction case. This increase can be attributed to the change in the cotangent of the beach slope which is measured from the wave breaking elevation, -6.4 feet (SWL – H/0.78 = 10.1 – 12.85/0.78 = -6.4 feet) to the anticipated runup location which was taken at the crest of the beach. The change in the effective slope over 11-years is likely a result of wave action on the dynamic beach more so than the recent construction which took place on the upland of the beach. A review of 2011, 2012, and 2016 LiDAR confirmed from the slope of the beach is dynamic in nature and the slope of the beach has increased in areas outside of the construction limits.
The SBEACH results are shown below:

Pre-Construction (2006 LiDAR Data) SBEACH Results

-300 -250 -200 -150 -100 -50 0 50 100 150 200 250 300
Elevation (ft NAVD88)
-10
Distance Offshore (ft)

Initial Profile | Final Profile | Elevation Change (ft)

Post-Construction SBEACH Results

-300 -250 -200 -150 -100 -50 0 50 100 150 200 250 300
Elevation (ft NAVD88)
-10
Distance Offshore (ft)

Initial Profile | Final Profile | Elevation Change (ft)

The building is located at approximately -232 feet to -132 feet offshore. The retaining wall is located at approximately -232 feet offshore.
The SBEACH model shows:
- The beach sand pre- and post-construction is erodible.
- Approximately 2.5 feet of scour is predicted at the grade beam post-construction.
  o This much scour would expose the grade beam.
  o This scour depth is more conservative than the estimated scour depth from the
    Coastal Engineering Manual’s (CEM) eq VI-5-259 = 1.6 feet ∴ the SBEACH
    Scour will be used for analysis.
      ▪ CEM eq VI-5-259: \( S_m = H_{max} = 1.6 \) feet
        Where \( S_m \) = scour depth
        \( H_{max} \) = Max wave height at building (extracted from SBEACH Model &
        compared to wave height in WHAFIS Model).
- Grade is seen to increase at the retaining wall.
  o The retaining wall does not appear to be interfering with scour under the building.
  o The Coastal Engineering Manual’s (CEM) eq VI-5-259 estimates scour = 0.3 feet
    ∴ the CEM Scour will be used for analysis.
      ▪ CEM eq VI-5-259: \( S_m = H_{max} = 0.3 \) feet
        Where \( S_m \) = scour depth
        \( H_{max} \) = Max wave height at building (extracted from WHAFIS Model &
        compared to wave height in SBEACH Model).
- Pre- and post- construction scour is of similar magnitude and the post- construction
  condition is not anticipated to increase erosion on site.

VI) Wave Loads: Loads were calculated on the grade beams using the methodology outlined in
US Dept. of Transportation Federal Highway Administration Hydraulic Engineering Circular
No. 25, Highways in the Coastal Environment, Publication FHWA-NHI-07-096, June 2008.

Inputs:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Period</td>
<td>100 Yr</td>
</tr>
<tr>
<td>( \rho )</td>
<td>1.99 slugs/ft^3</td>
</tr>
<tr>
<td>( g )</td>
<td>32.2 ft/s^2</td>
</tr>
<tr>
<td>( H )</td>
<td>1.60 ft</td>
</tr>
<tr>
<td>( H_1 )</td>
<td>2.67 ft</td>
</tr>
<tr>
<td>( T_p )</td>
<td>5.92 sec</td>
</tr>
<tr>
<td>Water Level</td>
<td>11.1 ft</td>
</tr>
<tr>
<td>Grade El</td>
<td>8.2 ft</td>
</tr>
<tr>
<td>( d )</td>
<td>2.9 ft</td>
</tr>
<tr>
<td>( H_d )</td>
<td>2.262 ft</td>
</tr>
<tr>
<td>( W )</td>
<td>2 ft</td>
</tr>
<tr>
<td>Top of grade beam El</td>
<td>10.7 ft</td>
</tr>
<tr>
<td>( H_{design} )</td>
<td>1.6 ft</td>
</tr>
</tbody>
</table>

Return Period = Return period of design case
\( \rho \) = density (slugs/ft^3)
\( g \) = gravity (ft/s^2)
\( H \) = Wave height at building (ft)
\( H_1 \) = Average of the highest 1% of waves (ft)
\( T_p \) = Peak wave period (sec)
Water Level = TWL elevation (ft NAVD 88)
Grade El = Elevation of grade (ft NAVD 88), post
scour = 10.7 - 2.5" = 8.2"
\( d \) = water depth (ft) = TWL - (Gr - Scour) = 2.9
\( H_d \) = Depth Limited Wave Height (ft)
\( W \) = grade beam width (ft) = Ah (ft^2/ft)
Top of grade beam El = top elevation of grade beam
(ft NAVD 88)
\( H_{design} \) = Design wave
**Horizontal Force (Max):**

\[ F_h = [1 + C_r(N - 1)] C_{va-h} F_h^* \]

Where:
- \( F_h \) = maximum horizontal wave induced load
- \( C_{va-h} \) = an empirical coefficient for the horizontal varying load = 1 (US DOT 2008)
- \( C_r \) = a reduction coefficient for reduced horizontal loads on the internal girders = 0.4 (US DOT 2008)
- \( N \) = number of girders supporting the deck = 1
- \( F_h^* \) = a reference horizontal load:
  \[ F_h^* = \gamma (\Delta Z_h) A_h \]

Where:
- \( \gamma \) = unit weight of water (64 lb/ft³ for salt water)
- \( A_h \) = The area of the projection of the bridge deck onto the horizontal plane = \( X \text{ ft}^2/\text{ft} \)
- \( \Delta Z_h \) = Difference between the elevation of the crest of the maximum wave and the elevation of the centroid of \( A_h \) of the deck.

Assuming centroid of \( A_h \) occurs at mid-point:

\[ \Delta Z_h = (\eta_{\text{max}} + \text{SWL}) - (\text{El top of deck} - \frac{A_h}{2}) \]

Where:
- \( \text{SWL} \) = the stillwater (since wave is broken TWL is used instead)
- \( \eta_{\text{max}} \) = Design sea state with significant wave height:
  \[ \eta_{\text{max}} = 1.3H_{\text{design}} \]

\( \eta_{\text{max}} = 2.08 \text{ ft} \)
\( \Delta Z_h = 3.08 \text{ ft} \) **Note:** \( Z_h \) is capped such that the TWL does not exceed the top of the grade beam

\( F_h^* = 394.24 \text{ lb/ft} \)
\( F_h = 394.24 \text{ lb/ft} \)
Vertical Force (max):

\[ F_v = C_{va-v} F_v^* \]

Where:
- \( F_v \) = maximum vertical wave induced load
- \( C_{va-v} \) = an empirical coefficient for the vertical varying load = 1 (US DOT 2008)
- \( F_v^* \) = a reference vertical load:

\[ F_v^* = \gamma (\Delta Z_v) A_v \]

Where:
- \( \gamma \) = unit weight of water (64 lb/ft\(^3\) for salt water)
- \( A_v \) = The area of the projection of the bridge deck onto the vertical plane = 1 s.f./ft
- \( \Delta Z_v \) = Difference between the elevation of the crest of the maximum wave and the elevation of the underside of the bridge deck:

\[ \Delta Z_v = (\eta_{max} + SWL) - El\ Underside\ Deck \]

SWL = the stillwater (since wave is broken TWL is used instead)
- \( \eta_{max} \) = Design sea state with significant wave height:

\[ \eta_{max} = 1.3H_{design} \]

El Underside Deck = Top pier El - W

- \( \eta_{max} = 2.08 \) ft
- \( \Delta Z_v = 4.08 \) ft
- \( F_v^* = 261.12 \) psf

Note: Zh is capped such that the TWL does not exceed the top of the grade beam

\[ F_v = 261.12 \] psf

<table>
<thead>
<tr>
<th>Summary:</th>
<th>100-Yr Return Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodology</td>
<td>Direction</td>
</tr>
<tr>
<td>DOT, 1% Wave</td>
<td>Horizontal</td>
</tr>
<tr>
<td>DOT, 1% Wave</td>
<td>Vertical</td>
</tr>
</tbody>
</table>

Note:
1. Loads are not factored
2. Horizontal load applied to center of grade beam
3. Loads are hydrodynamic loads only. Hydrostatic and buoyant loads are not tabulated above.
VII) **Reflection Analysis:** Wave reflection due to the grade beams, retaining wall, and fill were investigated.

**Grade Beams:** Wave reflection along the grade beams was analyzed using the *Combined Diffraction and Reflection with a Uniform Grid* application of ACES Version 4.03. The grade beam was assumed to act as a vertical wall and assumed to be the X-Axis as shown below:

![Diagram showing wave reflection and grid](image)

The following parameters were input into the model:

- Incident Wave Height ($H_i$) = 1.6 feet (which is the maximum wave height at building (extracted from SBEACH Model & compared to wave height in WHAFIS Model).
- Wave Period = 5.97 seconds
- Water Depth ($d$) = TWL – (Gr - Scour) = 2.9 feet
  - Initial model results showed that reflected waves would be broken due to the limited water depth. This value was artificially increased to $d = 4$ feet to investigate how the grade beams would act under a storm of sufficient water depth.
- Wave angle = Varied from $0^\circ$ to $90^\circ$
  - The origin of the grid was assumed to be at the corner of the grade beam. To investigate structures to the north of the Penfield Pavilion, the origin was assumed to be on the northern corner of the grade beam, and to investigate structures to the south of the building, the origin was assumed to be on the southern corner of the building.
- Wall angle = $0^\circ$ (vertical)

The nearest corner of adjacent buildings is located at the following coordinates:

<table>
<thead>
<tr>
<th>Point</th>
<th>X</th>
<th>Y</th>
<th>North or South</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-270</td>
<td>0</td>
<td>South</td>
</tr>
<tr>
<td>2</td>
<td>-440</td>
<td>50</td>
<td>South</td>
</tr>
<tr>
<td>3</td>
<td>-470</td>
<td>40</td>
<td>North</td>
</tr>
</tbody>
</table>
Buildings shielded by these structures were not included in the analysis. A sketch showing the location of these points is attached as the last page of this package. The modified wave height along the grid are given below for each wave angle:

### Wave Angle = 0°

<table>
<thead>
<tr>
<th>x</th>
<th>-500.00</th>
<th>-450.00</th>
<th>-400.00</th>
<th>-350.00</th>
<th>-300.00</th>
<th>-250.00</th>
<th>-200.00</th>
<th>-150.00</th>
<th>-100.00</th>
<th>-50.00</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y</td>
<td>0.00</td>
<td>0.80</td>
<td>0.80</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.90</td>
<td>0.92</td>
<td>0.95</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### Wave Angle = 15°

<table>
<thead>
<tr>
<th>x</th>
<th>-500.00</th>
<th>-450.00</th>
<th>-400.00</th>
<th>-350.00</th>
<th>-300.00</th>
<th>-250.00</th>
<th>-200.00</th>
<th>-150.00</th>
<th>-100.00</th>
<th>-50.00</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>y</td>
<td>0.00</td>
<td>0.80</td>
<td>0.80</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.90</td>
<td>0.92</td>
<td>0.95</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### Wave Angle = 30°

<table>
<thead>
<tr>
<th>x</th>
<th>-500.00</th>
<th>-450.00</th>
<th>-400.00</th>
<th>-350.00</th>
<th>-300.00</th>
<th>-250.00</th>
<th>-200.00</th>
<th>-150.00</th>
<th>-100.00</th>
<th>-50.00</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y</td>
<td>0.00</td>
<td>0.80</td>
<td>0.80</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.90</td>
<td>0.92</td>
<td>0.95</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### Wave Angle = 45°

<table>
<thead>
<tr>
<th>x</th>
<th>-500.00</th>
<th>-450.00</th>
<th>-400.00</th>
<th>-350.00</th>
<th>-300.00</th>
<th>-250.00</th>
<th>-200.00</th>
<th>-150.00</th>
<th>-100.00</th>
<th>-50.00</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y</td>
<td>0.00</td>
<td>0.80</td>
<td>0.80</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.90</td>
<td>0.92</td>
<td>0.95</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### Wave Angle = 60°

<table>
<thead>
<tr>
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<th>-400.00</th>
<th>-350.00</th>
<th>-300.00</th>
<th>-250.00</th>
<th>-200.00</th>
<th>-150.00</th>
<th>-100.00</th>
<th>-50.00</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>y</td>
<td>0.00</td>
<td>0.80</td>
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<td>0.88</td>
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</table>
Wave Angle = 75°

<table>
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<th>Modified wave heights (ft)</th>
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<th>450.00</th>
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<th>300.00</th>
<th>250.00</th>
<th>200.00</th>
<th>150.00</th>
<th>100.00</th>
<th>50.00</th>
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</table>

Wave Angle = 90°

<table>
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<th>400.00</th>
<th>350.00</th>
<th>300.00</th>
<th>250.00</th>
<th>200.00</th>
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<th>50.00</th>
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<tbody>
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<td>1.60</td>
<td>1.59</td>
<td>1.61</td>
<td>1.59</td>
<td>1.60</td>
<td>1.63</td>
<td>1.60</td>
<td>1.63</td>
<td>1.52</td>
</tr>
<tr>
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<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.59</td>
<td>1.60</td>
<td>1.63</td>
<td>1.60</td>
<td>1.63</td>
<td>1.51</td>
</tr>
<tr>
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<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.63</td>
</tr>
<tr>
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<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
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<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
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<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
</tr>
</tbody>
</table>

x° = -500.00 -450.00 -400.00 -350.00 -300.00 -250.00 -200.00 -150.00 -100.00 -50.00 0.00

Summary:

<table>
<thead>
<tr>
<th>Wave Angle</th>
<th>Reflected Wave Height (ft) at Adjacent Building Point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>0.8</td>
</tr>
<tr>
<td>15</td>
<td>1.6</td>
</tr>
<tr>
<td>30</td>
<td>1.6</td>
</tr>
<tr>
<td>45</td>
<td>1.6</td>
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<td>60</td>
<td>1.6</td>
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<tr>
<td>75</td>
<td>1.6</td>
</tr>
<tr>
<td>90</td>
<td>1.6</td>
</tr>
</tbody>
</table>

The reflection analysis demonstrates that there is ≤ 0.01-foot increase in wave height at the adjacent buildings.
Retaining Wall: Wave reflection along the retaining wall was also analyzed using the Combined Diffraction and Reflection with a Uniform Grid application of ACES Version 4.03. The wall was assumed to act as a vertical wall and assumed to be the X-Axis.

The following parameters were input into the model:
- Incident Wave Height (H0) = 0.3 feet (which is the maximum wave height at retaining wall (extracted from WHAFIS Model & compared to wave height in SBEACH Model).
- Wave Period = 5.97 seconds
- Water Depth (d) = TWL - (Gr - Scour) = 11.1 ft - (10.7 ft - 0.3 ft) = 0.7 ft
  - Initial model results showed that reflected waves would be broken due to the limited water depth. This value was artificially increased to d = 2 feet to investigate how the grade beams would act under a storm of sufficient water depth.
- Wave angle = Varied from 0° to 90°
  - The origin of the grid was assumed to be at the corner of the grade beam. To investigate structures to the north of the Penfield Pavilion, the origin was assumed to be on the northern corner of the grade beam, and to investigate structures to the south of the building, the origin was assumed to be on the southern corner of the building.
- Wall angle = 0° (vertical)

The nearest corner of adjacent buildings is located at the following coordinates:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-210</td>
<td>30</td>
<td>South corner of Pavilion</td>
</tr>
<tr>
<td>2</td>
<td>-30</td>
<td>20</td>
<td>North corner of Pavilion</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>40</td>
<td>South</td>
</tr>
<tr>
<td>4</td>
<td>330</td>
<td>160</td>
<td>North</td>
</tr>
</tbody>
</table>

Buildings shielded by these structures were not included in the analysis. A sketch showing the location of these points is attached as the last page of this package. The modified wave height along the grid are given below for each wave angle:

### Wave Angle = 0°

<table>
<thead>
<tr>
<th>x=</th>
<th>220.00</th>
<th>170.00</th>
<th>120.00</th>
<th>70.00</th>
<th>20.00</th>
<th>30.00</th>
<th>80.00</th>
<th>130.00</th>
<th>180.00</th>
<th>230.00</th>
<th>280.00</th>
<th>330.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>y=</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.00</td>
<td>0.20</td>
<td>0.33</td>
<td>0.29</td>
<td>0.28</td>
<td>0.29</td>
<td>0.29</td>
<td>0.31</td>
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<td>0.29</td>
<td>0.29</td>
</tr>
<tr>
<td>140.00</td>
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<td>0.29</td>
<td>0.33</td>
<td>0.28</td>
<td>0.31</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
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<td>0.31</td>
</tr>
<tr>
<td>120.00</td>
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<td>0.27</td>
<td>0.30</td>
<td>0.30</td>
<td>0.31</td>
<td>0.31</td>
<td>0.30</td>
<td>0.31</td>
<td>0.31</td>
<td>0.31</td>
<td>0.31</td>
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</tr>
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<td>0.27</td>
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<td>0.31</td>
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</tr>
<tr>
<td>80.00</td>
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<td>0.34</td>
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<td>0.30</td>
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<td>0.35</td>
<td>0.24</td>
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<td>0.29</td>
<td>0.28</td>
<td>0.29</td>
<td>0.28</td>
<td>0.28</td>
</tr>
<tr>
<td>40.00</td>
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<td>0.29</td>
<td>0.31</td>
<td>0.30</td>
<td>0.29</td>
<td>0.29</td>
<td>0.29</td>
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<tr>
<td>20.00</td>
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</tbody>
</table>

RACE COASTAL ENGINEERING
## Wave calculations

### Wave Angle = 15°

<table>
<thead>
<tr>
<th>Modified wave heights (ft)</th>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>y=100.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=120.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=130.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=140.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=150.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=160.00</td>
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<td>0.00</td>
</tr>
<tr>
<td>x=280.00</td>
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### Wave Angle = 30°

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<tr>
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</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>y=100.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=120.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=130.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=140.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=150.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
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</tr>
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<td>0.00</td>
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### Wave Angle = 45°

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</tr>
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</tr>
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<tr>
<td>y=120.00</td>
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</tr>
<tr>
<td>x=280.00</td>
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### Wave Angle = 60°

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</tr>
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<tr>
<td>y=120.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>y=130.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=140.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
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<td>0.00</td>
</tr>
<tr>
<td>y=160.00</td>
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<td>0.00</td>
</tr>
<tr>
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<td>0.00</td>
</tr>
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</table>

### Wave Angle = 75°

<table>
<thead>
<tr>
<th>Modified wave heights (ft)</th>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>x=220.00</td>
<td>0.00</td>
<td>0.30</td>
</tr>
<tr>
<td>y=100.00</td>
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<td>0.00</td>
</tr>
<tr>
<td>y=120.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=130.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>y=140.00</td>
<td>0.00</td>
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<td>0.00</td>
</tr>
<tr>
<td>y=160.00</td>
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<td>0.00</td>
</tr>
<tr>
<td>x=280.00</td>
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</table>
Wave Angle = 90°

<table>
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<th>-120.00</th>
<th>-70.00</th>
<th>-20.00</th>
<th>50.00</th>
<th>100.00</th>
<th>150.00</th>
<th>200.00</th>
<th>250.00</th>
<th>300.00</th>
</tr>
</thead>
<tbody>
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<td>0.35</td>
<td>0.48</td>
<td>0.36</td>
<td>0.45</td>
<td>0.47</td>
<td>0.46</td>
<td>0.46</td>
</tr>
<tr>
<td>y = 140.00</td>
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<td>0.29</td>
<td>0.31</td>
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<td>0.36</td>
<td>0.45</td>
<td>0.47</td>
<td>0.46</td>
<td>0.46</td>
</tr>
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<td>0.31</td>
<td>0.31</td>
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<td>0.49</td>
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<td>0.44</td>
<td>0.49</td>
<td>0.48</td>
<td>0.46</td>
<td>0.46</td>
</tr>
<tr>
<td>y = 100.00</td>
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<td>0.28</td>
<td>0.31</td>
<td>0.28</td>
<td>0.36</td>
<td>0.49</td>
<td>0.44</td>
<td>0.48</td>
<td>0.48</td>
<td>0.46</td>
<td>0.46</td>
</tr>
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<td>0.21</td>
<td>0.21</td>
<td>0.21</td>
<td>0.21</td>
</tr>
<tr>
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<td>0.30</td>
<td>0.31</td>
<td>0.26</td>
<td>0.29</td>
<td>0.44</td>
<td>0.49</td>
<td>0.49</td>
<td>0.49</td>
<td>0.49</td>
<td>0.49</td>
</tr>
<tr>
<td>y = 40.00</td>
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<td>0.30</td>
<td>0.28</td>
<td>0.28</td>
<td>0.31</td>
<td>0.31</td>
<td>0.31</td>
<td>0.31</td>
<td>0.31</td>
<td>0.31</td>
</tr>
<tr>
<td>y = 20.00</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td>x = 100.00</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Summary:

<table>
<thead>
<tr>
<th>Wave Angle</th>
<th>Reflected Wave Height (ft) at Adjacent Building Point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>0.2</td>
</tr>
<tr>
<td>15</td>
<td>0.3</td>
</tr>
<tr>
<td>30</td>
<td>0.3</td>
</tr>
<tr>
<td>45</td>
<td>0.3</td>
</tr>
<tr>
<td>60</td>
<td>0.3</td>
</tr>
<tr>
<td>75</td>
<td>0.3</td>
</tr>
<tr>
<td>90</td>
<td>0.3</td>
</tr>
</tbody>
</table>

The reflection analysis shows that the retaining wall has the potential to create reflected waves up to 0.6 feet high. This reflected wave is 1 foot less than the maximum anticipated wave height in the vicinity of the Penfield Pavilion and is unlikely to have an impact if the structures were designed using the maximum anticipated wave height.
Fill: Reflection due to the fill was calculated using the methodology outlined in the 1984 *Shore Protection Manual* Chapter 2, Section V. Reflection is based upon the slope of the beach, the incident wave height, and the deep-water wave height which are used to calculate the surf-similarity parameter:

$$\xi = \frac{1.0}{\text{Cot} \theta \sqrt{H_i/L_o}}$$

The surf-similarity parameter was used to read the wave reflection coefficients for the beach of the pre- and post-construction slopes using Figure 2-65 from the *Shore Protection Manual*. The reflected wave height is found using the following equation:

$$X = \frac{H_r}{H_i}$$

Where:

- $X$ = the wave reflection coefficient
- $H_r$ = the reflected wave height
- $H_i$ = Incident wave height

The wave reflection coefficients from Figure 2-65 are given below:

<table>
<thead>
<tr>
<th>Pre-Construction</th>
<th>Post-Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H = 12.85$</td>
<td>$H = 12.85$</td>
</tr>
<tr>
<td>$L = 5.12 \text{T}^2 =$ 179.4</td>
<td>$L = 5.12 \text{T}^2 =$ 179.4</td>
</tr>
<tr>
<td>$\text{Cot}(\theta) =$ 22.78</td>
<td>$\text{Cot}(\theta) =$ 18.98</td>
</tr>
<tr>
<td>$\xi =$ 0.16</td>
<td>$\xi =$ 0.20</td>
</tr>
<tr>
<td>$X =$ &lt;0.01</td>
<td>$X =$ &lt;0.01</td>
</tr>
</tbody>
</table>

This results in a reflected wave height of less than 0.13 feet for both the pre- and post-construction cases .: the existing fill will not increase wave reflection at the site.
VIII) Summary: Wave runup, wave crest, erosion, load, and reflection analyses were performed to investigate whether the fill, grade beam and retaining wall under the building would divert water to adjacent properties and would not cause damage to the underside of the Pavilion structure during flood events. The results of each analysis are summarized below:

Runup: There is a slight increase in runup in the post-construction case when compared to the pre-construction case. This increase can be attributed to the change in the cotangent of the beach slope. The change in the slope over 11-years is likely a result of wave action on the dynamic beach more so than the recent construction which took place on the upland of the beach. A review of 2011, 2012, and 2016 LiDAR confirmed from the slope of the beach is dynamic in nature and the slope of the beach has increased in areas outside of the construction limits. As a result, it is the opinion of RACE that the “as-built” conditions are not directly attributed to the increase in wave runup.

Wave Crest: The “as-built” conditions resulted in a decrease in wave crest elevation.

Erosion Analysis: Both the pre- and post-construction conditions are erodible. The anticipated scour depth at the grade beams is 2.5 feet. The anticipated scour depth on the waterward side of the retaining wall is 0.3 feet. Pre- and post-construction scour is of similar magnitude. It is anticipated that the new building will not increase erosion on site.

Wave Loads: Loads were calculated on the grade beams using the methodology outlined in U.S. Dept. of Transportation Federal Highway Administration Hydraulic Engineering Circular No. 25, Highways in the Coastal Environment, Publication FHWA-NHI-07-096, June 2008. Wave loads are summarized below:

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Direction</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, 1% Wave</td>
<td>Horizontal</td>
<td>394 lb/ft</td>
</tr>
<tr>
<td>DOT, 1% Wave</td>
<td>Vertical</td>
<td>261 psf</td>
</tr>
</tbody>
</table>

Note:
1. Loads are not factored
2. Horizontal load applied to center of grade beam
3. Loads are hydrodynamic loads only. Hydrostatic and buoyant loads are not tabulated above.

Reflection Analysis: Wave reflection due to the grade beams, retaining wall, and fill were investigated. The reflection analysis demonstrated that the fill and grade beams would not increase wave reflection on site or at adjacent properties. The reflection analysis demonstrated that the retaining wall has the potential to create reflected waves up to 0.6 feet high. This reflected wave is 1 foot less than the maximum anticipated wave height in the vicinity of the Penfield Pavilion and is unlikely to have an impact if the structures were designed using the maximum anticipated wave height.

It is the opinion of RACE that if the building has been designed to be stable accounting for the loads and scour depths computed herein then the fill, grade beam and retaining wall under the building would not divert water to adjacent properties and would not cause damage to the underside of the Pavilion structure during flood events.
January 18, 2019

Mr. Joseph Michelangelo, P.E.
Director of Public Works
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

Attention: Joseph Michelangelo, P.E.
Director of Public Works
JMichelangelo@Fairfielddct.org

Reference: Penfield Pavilion – Repair and Reconstruction
323 Fairfield Beach Road, Fairfield, CT

Dear Mr. Michelangelo:

RACE COASTAL ENGINEERING ("RACE") herein provides following commentary regarding our review of the Town of Fairfield Penfield Pavilion Facility for conformance with associated regulations related to foundation structure:

1. **It is the opinion of RACE that Penfield Pavilion is in compliance with 44 C.F.R. § 60.3(e)(5).**

   44 C.F.R. § 60.3(e)(5) and its adoption into Town Zoning regulations in Section 32.5(c) requires that the space below the lowest floor be free of obstruction. As constructed, the grade beams are below grade and the area under the building is free from obstructions other than required foundation and building access elements.

   FEMA’s conclusion in their November 28, 2018 letter states, “FEMA has determined that the Town has violated the minimum floodplain management criteria under 44 C.F.R. § 60.3(e)(5) by creating an impermissible obstruction through the construction of the foundation of the Pavilion with horizontal grade beams above the natural grade and below the BFE. [emphasis added]” These statutes referenced above and applicable to the design of the building foundation do not specifically restrict “grade beams above the natural grade and below the BFE”.

   44 C.F.R. § 60.3(e)(5) states:

   “Provide that all new construction and substantial improvements within Zones VI-30, VE, and V on the community’s FIRM have the space below the lowest floor either free of obstruction [emphasis added] or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purposes of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or State codes) may be
permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

(i) Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and,

(ii) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards."

Town Zoning Regulation 32.5(c) has adopted this and states:

“All new construction and substantial improvements shall be elevated on adequately anchored pilings or columns, and securely anchored to such piles, and columns so that the lowest structural member of the lowest floor, excluding piles or columns, is elevated to or above the base flood level. A registered professional engineer or architect shall certify that the structure is securely anchored to adequately anchored pilings or columns in order to withstand velocity waters and hurricane wave wash, and the space beneath the lowest floor shall be free of obstruction or be constructed with breakaway walls intended to collapse under stress without jeopardizing structural support; said space shall not be used for human habitation.

For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 or more than 20 pounds per square foot (either by design or when so required by local or State codes) may be permitted only if a registered professional engineer or architect has certified that the designs proposed meet the following conditions:

Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and the elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acts simultaneously on all building components (structural and non-structural). Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local standards. Such enclosed space shall be usable solely for parking of vehicles, building access, or storage.”

2. FEMA’s conclusion that the building is not compliant seems to be drawn on an interpretation of FEMA’s Technical Bulletin 5, Free-of-Obstruction Requirements (2008) (“TB 5”). TB 5 is a guidance document not adopted as a statute or legally binding building code. Furthermore, there is latitude for interpretation that Penfield Pavilion, as constructed, is compliant with TB 5.

TB 5 notes that “Several of the NFIP’s flood-resistant design and construction requirements are performance requirements, not prescriptive requirements [emphasis added]. In other words, the expected building performance is stated, but the ways by which that performance may be achieved are not prescribed. It is up to the community official to determine whether a specific design submitted by a design professional satisfies the performance requirement. (pg. 5)”
Furthermore;

"This Technical Bulletin does not recommend a blanket prohibition of below-BFE building elements and site development practices.... (pg. 6)"

As noted above, TB 5 does not seem to be intended to provide prescriptive requirements, but rather to insure performance requirements are met. It is reasonable to assume that such “performance requirements” are related to potential damage caused by building elements. This assumption is supported by the following from TB 5:

"Any construction or development practice below the BFE (even piles and columns permitted by the NFIP) will cause a localized disruption of flow and waves during the base flood. Whether the localized disruption is great enough to harm the elevated building or surrounding buildings is the central question.” (pg. 5)

In our interpretation of TB 5 the statement “Grade beams that are placed with their upper surfaces flush with or below the natural grade are not considered obstructions and are allowed under the NFIP.” (pg. 13) is a prescriptive requirement that, if met, would allow for the building to comply with NFIP requirements. It is our further interpretation that grade beams constructed at other elevations may be allowed under NFIP if it satisfied the performance requirements of not harming the elevated building or surrounding buildings.

3. TB 5 provides for the possibility to evaluate potential obstructions (and associated performance requirements) by use of numerical modeling. Such modeling has been performed and has indicated that no adverse impacts associated with grade beams as constructed would occur.

TB 5 states: "Any construction or development practice below the BFE (even piles or columns permitted by the NFIP) will cause localized disruption of flow and waves during the base flood. Whether the localized disruption is great enough to harm the elevated building or surrounding buildings is the central question. [emphasis added]” (pg. 5)

In responding to this “central question”, RACE performed coastal engineering analyses using methodologies outlined in FEMA’s Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update (February 2007), the U.S. Army Corps of Engineers (“USACE”) Coastal Engineering Manual (April 2002), and the USACE’s Shore Protection Manual (1984). These analyses incorporated the use of numerical coastal hydraulic models developed by FEMA and the USACE. As part of this effort, the grade beam elements of the building were reviewed to determine if they would divert water to adjacent properties or cause damage to the Pavilion structure.

These analyses were included as part of our December 1, 2017 correspondence to Mr. Joseph Michelangelo, P.E., with the subject, Penfield Pavilion – Repair and Reconstruction – 323 Fairfield Beach Road, Fairfield, CT.

The conclusion of this letter is stated below:

“It is the opinion of RACE that if the building has been designed to be stable accounting for the loads and scour depths discussed above then the fill, grade beam and retaining wall under the building will not divert water to adjacent properties and will not cause damage to the underside of the Pavilion structure during flood events. As such, these elements should not be considered
"significant" obstructions and are consistent with the floodplain management criteria of 44 C.F.R. 60.3(e)(5)."

The stability of the building and structural capacity to resist the loads and scour was analyzed by DeStefano & Chamberlain, Inc. Mr. Kevin H. Chamberlain, P.E. in his December 1, 2017 letter to Mr. Joseph Michelangelo, P.E., with the subject, RE: Penfield Pavilion – Repair and Reconstruction 323 Fairfield Beach Road, Fairfield, CT states:

"We have performed structural calculations to verify that the grade beams can resist these loads in combination with hydrostatic pressure, wind, and gravity loads. We can certify that the foundation system can safely resist flood depths, pressures, velocities, impact, and uplift forces associated with the Base Flood in the VE 13' Zone based on these calculated pressures."

If you have any questions on the above please do not hesitate to contact the undersigned at 203-377-0663.

Very truly yours,

RACE COASTAL ENGINEERING


Devin J. Santa, PE
President

Copy: Mr. Stanton Lesser, Esq.
Fairfield Town Attorney
### IV) Wave Crest Calculation

Wave crest elevation was computed using the Wave Height Analysis for Flood Insurance Study (WHAFIS) model within FEMA's Coastal Hazard Analysis Modeling Program (CHAMP). Pre-and post-construction transects were cut at the center of the new building. The wave information listed above were input into the model. The results are listed below:

<table>
<thead>
<tr>
<th>Station of Gutter</th>
<th>Elevation</th>
<th>Zone Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>16.61</td>
<td>V10 EL=17</td>
</tr>
<tr>
<td>2.33</td>
<td>16.50</td>
<td>V10 EL=16</td>
</tr>
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<td>24.15</td>
<td>15.50</td>
<td>V10 EL=15</td>
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<td>45.96</td>
<td>14.50</td>
<td>V10 EL=14</td>
</tr>
<tr>
<td>76.70</td>
<td>13.50</td>
<td>V10 EL=13</td>
</tr>
<tr>
<td>91.89</td>
<td>13.20</td>
<td>A 9 EL=13</td>
</tr>
<tr>
<td>150.14</td>
<td>12.50</td>
<td>A 9 EL=12</td>
</tr>
<tr>
<td>525.00</td>
<td>12.32</td>
<td>ZONE TERMINATED AT END OF TRANSECT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Station of Gutter</th>
<th>Elevation</th>
<th>Zone Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>16.61</td>
<td>V10 EL=17</td>
</tr>
<tr>
<td>1.65</td>
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<td>V10 EL=16</td>
</tr>
<tr>
<td>17.31</td>
<td>15.50</td>
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<td>34.56</td>
<td>14.50</td>
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<td>59.30</td>
<td>13.20</td>
<td>A 7 EL=13</td>
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<td>72.32</td>
<td>12.50</td>
<td>A 7 EL=12</td>
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<tr>
<td>99.13</td>
<td>11.50</td>
<td>A 7 EL=11</td>
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<td>303.27</td>
<td>11.50</td>
<td>A 7 EL=12</td>
</tr>
<tr>
<td>398.00</td>
<td>11.67</td>
<td>ZONE TERMINATED AT END OF TRANSECT</td>
</tr>
</tbody>
</table>

#### Pre-Construction WHAFIS Results

The new building is located at Sta. 1+32 to Sta 2+32. The Post-Construction WHAFIS results show wave crest elevation to remain the same or decrease.
V) **Erosion Analysis:** Three (3) sand samples were collected to determine the sediment properties at the site. All samples from the site were described as gray beach sand with the Unified Soil Classification System (USCS) classification of a poorly graded sand (SP). A sieve analysis was performed. The average $D_{50}$ of the samples was determined to be 0.026 inches (0.66 mm).

The USACE Storm-induced BEAch CHange model (SBEACH) was employed to estimate the quantities and limits of anticipated beach and backshore erosion that will result during the simulated storm event. A synthetic storm was generated to simulate a “100-yr” (1% annual chance) hurricane type event based on the wave parameters defined by FEMA. A time series was generated for the surge, wave heights, and wave periods associated with the 100-yr design event per recommendations outlined by Magnus Larson and Nicholas C. Kraus in the American Society of Civil Engineers Proceedings of Coastal Zone ‘89 pp. 607-621, 1989 - *Prediction of Beach Fill Response to Varying Waves and Water Levels*. The 100-yr design storm time series is given below:

![100-Yr Design Storm](image)

The SBEACH model was run on the as-built grades. The retaining wall on the landward side of the Pavilion was included in the model.
January 23, 2019

VIA HAND DELIVERY
VIA EMAIL to William Hackett, Dana Conover

Mr. Douglas Wolcott, Jr.
Acting Deputy Regional Administrator
FEMA Region I
99 High Street, 6th Floor
Boston, MA 02110

Through: Mr. William Hackett
Deputy Commissioner
Connecticut Department of Emergency Services and Public Protection
1111 Country Club Road
Middletown, CT 06457

Re: FEMA-4087-DR-CT
Town of Fairfield, CT, PA ID # 001-26620-00
First Appeal – De-obligation of $4,340,054.11 - Project Worksheet # 680

Dear Mr. Wolcott:

In accord with 44 CFR 206.206, and as instructed in letter from George F. Vanderschmidt to William Hackett and Michael C. Tetreau dated November 28, 2018, the Town of Fairfield, CT (as used in the Appeal documents “Town” or “Fairfield”) hereby submits its First Appeal relating to FEMA’s de-obligation of $4,340,054.11 under Project Worksheet (PW) 680. PW 680 pertained to damages to the Penfield Pavilion “Facility”) resulting from Hurricane Sandy, October 27 to November 8, 2012 (FEMA 4087-DR-CT).

The appeal documents submitted herewith consist of the Appeal, Exhibit List and Exhibits Numbers 1-19, all of which are attached hereto.
Please direct all inquiries and/or correspondence to:

Joseph Michelangelo,
Director, Department of Public Works
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824
jmichelangelo@fairfieldct.org

With a copy to
Stanton H. Lesser, Esq.
Town Attorney
1 Eliot Place
Fairfield, CT 06824
shlfly@aol.com

Very truly yours,

Michael C. Tetreau
First Selectman

Joseph Michelangelo
Director, Department of Public Works