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CENWO-ED-DG

19 August 2014

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: End State Technical Review Report, Phase I, construction completed 2012. Fort Bragg, NC, Freedom Chapel (PN 61035)

PART ONE, ASD FUNCTIONAL BASIS EVALUATION SUMMARY

This portion of the Memorandum will address the specific evaluations made as they relate to the Army Standard Design (ASD) for this facility type, discussed in the order observed. Because any completed facility also includes characteristics and features not part of the ASD requirements, not all of the potential Lesson's Learned have application to the ASD. The primary focus of this investigation is to improve the ASD and to do so in a way that reflects upon the underlying assumptions and theories (design concepts) upon which the ASD was developed. "PART TWO" of the Memorandum will include detail on the actual observations and take up the various issues unique to this facility as well as those applicable to the ASD. To assist perusal of the document the primary functional space type being discussed has been inserted (in parentheses) in between the appropriate groups of comments.

In general, all agreed that the completed facility is performing well in many ways. The users feel generally empowered to accomplish the Chaplaincy mission in ways that were just not possible before. This has been of tremendous value to the congregations being supported and the entire military community and Army mission.

Weaknesses of the facility focus primarily on a few components that are not functioning quite as intended. There were also a (very) small number of weaknesses that were rooted in all of the aspects of what puts a project together (contract, design, construction), as well.

Observations made that relate directly to the ASD requirements and the design concepts selected for use by the Office of the Chief of Chaplains (OCCH) are as follows:

1.1 Lighting in Worship Center is mounted low, making sight lines difficult for the Audio/Visual (A/V) system to utilize the installed projector screens near the stage. They would have preferred that the pendant lights be higher and retractable, to make it easier to change light bulbs. The user has located a floor-standing projection screen on the

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raised platform as a temporary solution. **The ASD stresses comprehensive good design and it does include information regarding the placement of projection screens and lighting in the Worship Center. However, any facility such as this is inherently complicated enough to make addressing every feature difficult for the designer/contractor. Adding appropriate verbiage could improve this problem for most facilities. (This is the same comment as 2.1)**

1.2 The Users like the separation between the Worship Center and Activity Center; however, the accordion partitions do not appear to be holding up well. The partitions are showing failure from improper use. The user said the automatic operation requires two keys and people to operate. At times, different groups that use these areas may not have been aware of the automatic operation and tried to manually close and open the partition. As a result, the partition does not fully close at this point (leaves a small gap near the bottom). This facility is one of the most used chapels on Post and providing a training manual or requiring non-electric only operation could be a better solution. **The Garrison is pursuing repair assistance in the short term and over time may allow the operable partitions to continue to function for some years to come. The CoS and OCCH have eliminated this form of flexibility from the 2012 ASDs based on on-going lessons learned. The system used in the 2004 ASD (and this facility) has shown superior performance to some others that have been tried. The serious need for some form of flexibility has been dramatically demonstrated at ALL ASD chapel facilities. (This is the same comment as 2.2)**

1.3 The raised platform does not have the electrical or communication outlets needed to function properly. This room was not constructed with a sound system and the one that is being added is not fully coordinated. **The Standard Design requires a general density of electrical power, but it is possible this piece of the space was not considered since the A/V design was not coordinated during construction. (This is the same comment as 2.5)**

1.4 This design did not incorporate storage under the raised platform in the Activity Center. The User stated that the storage under the stage for tables and chairs would have been incredibly helpful since they do not have enough storage space as it is. After going through comments made during the design process, it was decided at the 100% review meeting that the design would not incorporate storage under the raised platform. **This is a reoccurring issue from the Phase I ESTR. The introduction of under-stage storage began in 1985 but this sort of interpretation conflict, mis-coordination of storage dollies and other issues has led to the decision to discontinue their use in the current 2012 ASDs. (This is the same comment as 2.6)**

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1.5 Issues with the A/V design and procurement continue to cause problems at the Fort Bragg Chapel. According to an Independent A/V contractor hired to evaluate the existing conditions at the chapel, the sound system is incomplete and the Worship Center is not ideal for A/V functions. The speaker locations near the stage are not optimal for sound projection. Additionally, rear facing projector screens in the Worship Center are mounted above a stained glass panel, which causes the Chaplain's using the screen to look up, and over the audience instead of at the audience. The User suggests sub-contracting a sound engineer for optimal acoustic performance and placement of speakers and A/V equipment. **Problems with procuring the A/V equipment and inadequate conduit runs are affecting the performance of the facility. The intent of the ASD is to require the Contractor to submit an A/V design proposal of sufficient detail to evaluate the general quality, media, and recording/broadcasting supporting features. The 2012 ASD provides additional information regarding pre-construction coordination of the A/V system to include the design, specifications, and the testing and commissioning. (This is the same comment as 2.8)**

1.6 The acoustics in the Worship Center are not acceptable. Comments from the Users indicate the A/V system settings are difficult to use. This condition might contribute to the reverberation in the Worship Center, which hinders the performances. **The 2012 ASD provides additional information regarding pre-construction coordination of the A/V system to include the design, specifications, and the testing and commissioning. (This is the same comment as 2.9)**

1.7 The front classroom is being used as a sitting area and as a grieving room during memorial services. **The goal of the ASD is to allow each congregation or community group the optimum usable features for their activities in an environment where all share the benefits of a relatively flexible and extremely functional facility. (This is the same comment as 2.12)**

1.8 There is not enough storage in the facility. **The concept behind our provision of storage space was always recognized to be a probable source of complaint and Fort Bragg is no exception. The 2012 ASD will significantly improve on this situation. (This is the same comment as 2.16)**

1.9 This facility uses carpet on the Activity Center floor; the ASD calls for hard surface flooring but allows some latitude for local preference. In hindsight, the User would have preferred hard surface flooring such as porcelain tile. **This is a reoccurring issue from the Phase I ESTR. The floor finish decision, which deviates from the normal or "default" finish requirement of the ASD, has proved to be a problem. Some**

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finish decisions always occur during the design and construction process that vary slightly for a variety of reasons. At a minimum, in corridors adjacent to lobbies, it is recommended that hard surface flooring be used instead of carpet. (This is the same comment as 2.18)

1.10 The response to the keyless access control is very positive and increases building flexibility and security as temporary access codes can be issued instead of building keys. However, sometimes after a rain, the electronics on the keypad will malfunction. **This is good to see; both the RFP and the ASD require a keyless type (digital keypad) lockset on one exterior door of the local chaplains choosing. (This is the same comment as 2.21)**

1.11 Folding tables specified and used in this project are too heavy. **The ASD has been revised to require tables that are lighter weight in design. (This is the same comment as 2.24)**

1.12 The User recommended that a storage tower for wardrobe, file, and shelf storage be located in the private offices instead of a combination 2-drawer file cabinet with shelving above. The User needs a location to store a change of clothing. **This will be discussed with the OCCH and applicable changes will be made to the ASD. (This is the same comment as 2.25)**

IN SUMMARY: In general, the results of this ESTR demonstrate that the underlying concepts behind the 2004 ASD were sound and effective. Each of the principle functional areas and features are supporting an excellent level of successful ministry. The completed facility appears to represent a very-close-to-optimum balance between aesthetics, function, cost, and maintainability. The completed facility also appears to represent a high-value long-term asset for the military community, the Garrison, the OCCH, and the Army.

PART TWO, ALL OBSERVATIONS AND DISCUSSIONS

This portion of the Memorandum will address each observation discussed in the order observed. Because any completed facility also includes characteristics and features not part of the ASD requirements, not all of the potential Lesson's Learned have application to the ASD. Some are project specific and related to project history, unique points-of-view, unique features, or unique functions that needed to be added to the general facility mission. This portion of the report allows all such observations and discussions to be recorded and applied to future projects as appropriate. The following observations and discussions were identified:

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(Administrative Spaces)

Nothing Significant to Report (NSTR)

(The Worship Center)

2.1 Lighting in Worship Center is mounted low, making sight lines difficult for the A/V system to utilize the installed projector screens near the stage. They would have preferred that the pendant lights be higher and retractable, to make it easier to change light bulbs. The user has located a floor-standing projection screen on the raised platform as a temporary solution. **The ASD stresses comprehensive good design and it does include information regarding the placement of projection screens and lighting in the Worship Center. However, any facility such as this is inherently complicated enough to make addressing every feature difficult for the designer/contractor. Adding appropriate verbiage could improve this problem for most facilities.**

2.2 The Users like the separation between the Worship Center and Activity Center; however, the accordion partitions do not appear to be holding up well. The partitions are showing failure from improper use. The user said the automatic operation requires two keys and people to operate. At times, different groups that use these areas may not have been aware of the automatic operation and tried to manually close and open the partition. As a result, the partition does not fully close at this point (leaves a small gap near the bottom). This facility is one of the most used chapels on Post and providing a training manual or requiring non-electric only operation could be a better solution. **The Garrison is pursuing repair assistance in the short term and over time may allow the operable partitions to continue to function for some years to come. The CoS and OCCH have eliminated this form of flexibility from the 2012 ASDs based on on-going lessons learned. The system used in the 2004 ASD (and this facility) has shown superior performance to some others that have been tried. The serious need for some form of flexibility has been dramatically demonstrated at ALL ASD chapel facilities.**

2.3 Stained glass panels are backlit, but there is no obvious means to replace the lights behind the panels. **This issue was addressed in the Phase I report. The CoS has not come across this situation before and the stained glass arrangement is one that is unique to the Fort Bragg chapel. This is not an issue at this point because none of these lights has gone out. The contract documents from the architect/engineer (A/E) will provide the User the design details to the stained glass construction and installation.**

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2.4 Canned recessed lights above the stage in the Worship Center are not fitting properly and partially separated from the ceiling in some locations. **This specific problem at this facility does not reflect on the ASD.**

2.5 The raised platform does not have the electrical or communication outlets needed to function properly. This room was not constructed with a sound system and the one that is being added is not fully coordinated. **The Standard Design requires a general density of electrical power, but it is possible this piece of the space was not considered since the A/V design was not coordinated during construction.**

(The Activity Center)

2.6 This design did not incorporate storage under the raised platform in the Activity Center. The User stated that the storage under the stage for tables and chairs would have been incredibly helpful since they do not have enough storage space as it is. After going through comments made during the design process, it was decided at the 100% review meeting that the design would not incorporate storage under the raised platform. **This is a reoccurring issue from the Phase I ESTR. The introduction of under-stage storage began in 1985 but this sort of interpretation conflict, mis-coordination of storage dollies and other issues has led to the decision to discontinue their use in the current 2012 ASDs.**

2.7 The wall below the raised platform in the Activity Center is scuffed up. The User has not determined exactly how the scuff marks occur. (A decision during the design by the User Representatives eliminated the under platform storage which removed the access doors in this location.) **The CoS recommends installing a high impact resilient wall covering at this location to better handle the abuse and be cleanable. Sources for this type of product include Korogard's Protective Wallcovering (www.korogard.com/products/wallcoverings/protective-wallcovering.asp) or CS Acrovyn's High Impact Wall Covering (http://www.csgroup.com/acrovyn/wall-covering/040_060_075_high_impact_wall_covering).** This type of product is designed for use in high-traffic areas that are subject to abuse from impact, gouges, and scratches and to reduce maintenance costs from repairs and repetitive labor like painting. Color is integral throughout the entire thickness of the high impact resilient wall covering so that minor scratches or dents will not be visible. See the links above for recommended maintenance instructions for the high impact resilient wall covering.

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(The Baptistery Suite)

NSTR

(Audio/Visual System Issues)

2.8 Issues with the A/V design and procurement continue to cause problems at the Fort Bragg Chapel. According to an Independent A/V contractor hired to evaluate the existing conditions at the chapel, the sound system is incomplete and the Worship Center is not ideal for A/V functions. The speaker locations near the stage are not optimal for sound projection. Additionally, rear facing projector screens in the Worship Center are mounted above a stained glass panel, which causes the Chaplain's using the screen to look up, and over the audience instead of at the audience. The User suggests sub-contracting a sound engineer for optimal acoustic performance and placement of speakers and A/V equipment. **Problems with procuring the A/V equipment and inadequate conduit runs are affecting the performance of the facility. The intent of the ASD is to require the Contractor to submit an A/V design proposal of sufficient detail to evaluate the general quality, media, and recording/broadcasting supporting features. The 2012 ASD provides additional information regarding pre-construction coordination of the A/V system to include the design, specifications, and the testing and commissioning.**

2.9 The acoustics in the Worship Center are not acceptable. Comments from the Users indicate the A/V system settings are difficult to use. This condition might contribute to the reverberation in the Worship Center, which hinders the performances. **The 2012 ASD provides additional information regarding pre-construction coordination of the A/V system to include the design, specifications, and the testing and commissioning.**

2.10 The Users would like continued training to insure correct operation of the equipment, using a video tape of the initial training session for their records in addition to the O&M manuals. **The COS will review and consider adding additional language to the ASD to cover additional training, approximately 6 months after occupancy to address retraining users after they have some experience with the system.**

(The Kitchen Suite)

2.11 The ice machine is in need of repair; the contractor is replacing parts, a missing leg. Additionally, there are problems with drainage and maybe some electrical issues.

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These standard features should not be failing; it may be due to a problem with the specific manufacturer. This specific problem at this facility does not reflect on the ASD or standard construction procedures.

(The Blessed Sacrament Space)

NSTR

(The Sacristy and Robing Suite)

NTSR

(Multi-purpose/Classroom Spaces)

2.12 The front classroom is being used as a sitting area and as a grieving room during memorial services. **The goal of the ASD is to allow each congregation or community group the optimum usable features for their activities in an environment where all share the benefits of a relatively flexible and extremely functional facility.**

2.13 The Users stated that having the dry erase boards near the door windows in the multipurpose room was distracting. If the teacher was writing on the boards, the students view would be through the window in the hallway, and people walking would distract their attention. **An easy fix would be to cover the window, but this comment should be considered for future designs.**

2.14 The user indicated that a stove in the Multipurpose Rooms would be convenient to warm up foods. **This is the first time we have heard this request, and it does not seem likely that the standard would change to include this option. A solution for the user would be to use a plug-in cooking surface.**

(The Toddler Nursery Accommodations)

2.15 The Users really enjoy this space and offered ways to enhance some the safety and security features. One suggestion is to provide a Dutch door at the room entrance to prevent children dashing out the door when parents arrives to pick-up their child. **The COS recognizes that some facilities have a high demand for a child watch system. The goal of the ASD is to provide optimum usable features for all users' activities in any environment, where all share the benefits of a relatively flexible**

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and extremely functional facility. The COS intends to investigate this issue and amend the ASD to incorporate if appropriate.

(Vestibules/Lobbies/Corridors/Stairways)

NSTR

(Storage Spaces)

2.16 There is not enough storage in the facility. **The concept behind our provision of storage space was always recognized to be a probable source of complaint and Fort Bragg is no exception. The 2012 ASD will significantly improve on this situation.**

(Toilet Rooms and Janitor's Closets)

2.17 According to the User, the hot water throughout the building will get warm, but will never be hot. This is an issue for the shower especially. **The thermostatic mixing valve in the mechanical room might cause this. The building also utilizes solar water heating, which could be part of the issue, although unlikely.**

(Building Features and Finishes)

2.18 This facility uses carpet on the Activity Center floor; the ASD calls for hard surface flooring but allows some latitude for local preference. In hindsight, the User would have preferred hard surface flooring such as porcelain tile. **This is a reoccurring issue from the Phase I ESTR. The floor finish decision, which deviates from the normal or "default" finish requirement of the ASD, has proved to be a problem. Some finish decisions always occur during the design and construction process that vary slightly for a variety of reasons. At a minimum, in corridors adjacent to lobbies, it is recommended that hard surface flooring be used instead of carpet.**

2.19 Carpet is buckling in some areas. **This was also an End State Technical Review Phase 1 comment. During the Phase 1 review, it was suggested that this could be remedied under the product warranty. At this point, the warranty may no longer be in effect. Recommend discussing the carpet problem with Department of Public Works (DPW) so it can be corrected. DPW may have to contract with a carpet installer for repair. An installer with experience in the installation of carpet tile should complete the work.**

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2.20 The fabric used on the stacking chairs is very light in color and does not have a pattern. The fabric is already showing soiling in all rooms the stacking chairs are located. **This fabric was not originally specified in the FF&E. The chairs specified in the FF&E were a thermoplastic shell chair with no upholstered cushions. This must have been a change made by the User representative after the FF&E had been completed. The ASD currently has verbiage requiring that fabric be of a color and be patterned to help hide soiling. The way the Huntsville Center (HNC) furniture process works, the final fabric selections are made by the Installation, HNC Furniture POC, and oftentimes a User representative.**

2.21 The response to the keyless access control is very positive and increases building flexibility and security as temporary access codes can be issued instead of building keys. However, sometimes after a rain, the electronics on the keypad will malfunction. **This is good to see; both the RFP and the ASD require a keyless type (digital keypad) lockset on one exterior door of the local chaplains choosing.**

2.22 Wireless internet access for the facility would be a useful option. **The COS will continue to look for ways to integrate evolving technology into the ASD; however, some Installations have a policy that prohibits the use of wireless internet in some facilities.**

2.23 Adding an exterior electronic sign along the street in front of the chapel would assist with identifying the location of the chapel and communicating daily events. **The COS will continue to look for ways to integrate evolving technology into the ASD.**

(Furniture, Appliances, and Equipment Items)

2.24 Folding tables specified and used in this project are too heavy. **The ASD has been revised to require tables that are lighter weight in design.**

2.25 The User recommended that a storage tower for wardrobe, file, and shelf storage be located in the private offices instead of a combination 2-drawer file cabinet with shelving above. The User needs a location to store a change of clothing. **This will be discussed with the OCCH and applicable changes will be made to the ASD.**

2.26 The kneeler assemblies on a few of the pews are failing. **Verify with DPW what the years of warranty are on the pews and what it covers. The COS believes the ecclesiastical contract for this project required the pews to be warranted for 15 years.**

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2.27 When loaded, the chair feet on the stacking chair carts are scratching the floors where the floor transitions from carpet to the wood flooring adjacent to the stage in the Activity Center. The cart is the correct cart for the stacking chairs, but the chairs sit too low on the cart and the chair feet scratch the floor. The user is considering altering the stacking chair cart to have the chairs sit higher on the cart. **The COS will contact the manufacturer of the stacking chairs and cart to make them aware of this problem.**

(Equipment Rooms and Systems)

2.28 The Users indicated that there were some previous issues with the Heating, Ventilating, & Air Conditioning (HVAC) systems. There were areas that were too hot or too cold, and only one Air-Handling Unit (AHU) would be operating at any given time, conditioning either the worship/activity area or the classrooms/offices. **The COS was told that the contractor has corrected the issue with only one AHU operating, and that the heating and cooling issue has not been observed recently.**

2.29 Electrical controls in some rooms include motion sensors to control the on/off switch for the lights; however, the sensors are not set correctly. The lights will typically turn off in rooms if occupants are still for extended periods. **To meet LEED (Leadership in Energy and Environmental Design), the design includes sensors on the lighting circuit to conserve energy. The COS suggests lengthening the time delay for the motion sensors. Motion sensors are typically set to 15 minutes and could extend to 30.**

(Site Issues)

NSTR

PART THREE, UNIQUE ISSUES

No issues to report.

PART FOUR, THE REVIEW PROCESS AND PARTICIPANTS

The following team of participants gathered at the Fort Bragg Chapel on August 22, 2013. The review process began with a meeting and continuation of previous discussions of lessons learned related issues, building operations, descriptions of what congregations are being served and their usage patterns, etc. Once general

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discussion reached an appropriate point, the team shifted to a tour of the facility with further items brought up as we went.

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Any other questions, comments, or concerns on the aforementioned items may be directed to Mr. Askelon Parker, (402) 995-2173 or email address at Askelon.M.Parker@usace.army.mil.

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