



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

CENWO-ED-DG

10 July 2012

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: End State Technical Review Report, Phase II, construction completed 2011. Fort Lee, VA, Liberty Chapel (PN 21640),

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 was excellent (spectacular, wonderful, beautiful) 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. The congregations using this building are experiencing issues with some of the mechanical and electrical controls. During the winter months, the occupants are sufficiently warm and comfortable. However, during summer months the building occupants want more control over the HVAC settings, when the conditioned air is too cold. The temperature controls in some of the rooms, (classrooms and multipurpose rooms) do not provide an adequate range of adjustment or do not operate properly, making the congregants uncomfortable. Additionally, areas such as the Classrooms, Multi-purpose Rooms, and Choir Rooms are supposed to be served by systems that will provide individual temperature control in each space and should provide for economy of operation when only a few of these spaces are occupied. The electrical controls in the completed design included motion sensors to control the on/off switch for the lights. Some of the motion sensors, located in one location, inadvertently control lights in more than one room. The building congregants deemed this situation problematic and subsequently, in April of 2012, led to a decision to override the sensors in favor of using the manual controls, (switch) only. **This problem has been specifically addressed in the ASD text. While the ASD requires a minimum of 4 heating/cooling zones in the HVAC system, adding verbiage that is more explicit could improve the problem for future facilities.**



Recycled Paper

1.2. Some components of the A/V equipment outlets in the Activity Center (projectors and projection screens) and kitchen outlets were on the same circuit, resulting in tripped breakers when the electrical load demand exceeded the supply. As a result, a contractor was hired to re-wire outlets to separate circuits; the problem appears to be corrected. **Adequate number of circuits might alleviate this conflict but this is not a certainty. The currently developing ASD does include more text to avoid having this happen again.**

1.3. This facility was always intended to support a full range of Chaplaincy programs AND military community activities. However, an unintended consequence of having such a beautiful and full featured facility is that the military community is using it far more often and in far larger numbers than even envisioned in its design. While the Unit Ministry Team and the volunteers have been able to increase their managing tools to respond to that, some of the "fixed" features cannot keep up. Storage in the facility is not adequate; the small classrooms with doors that are linked to the Activity Center stage stairs are too small for their intended use and the user is using these rooms for storage. **The 2004 ASD was hampered by outside restrictions that have recently been relaxed. The 2012 ASD will significantly improve on this situation.**

1.4. The media console is located to one side of the Worship Center. The user recommends the media console be centrally located in the back of the Worship Center to allow for better balancing of sound in the room. It was also recommended to provide access to the lighting controls at the A/V console in the Worship Center and Activity Center so that the person operating the media console could adjust the A/V and lighting controls simultaneously. Additionally, recommendations from user when developing the A/V system design or providing guidance to an AE is to always provide allowances to incorporate the most current technology. Another recommendation was to provide a dedicated transformer for audio equipment and a dedicated transformer for projectors. The A/V contractor for this building has designed the system for future upgrades. Subsequent to the end of building construction, extra lighting controls were added to the design for better control and proximity to sound console. **This was understood at the time that the ASD control console location was established, but the desire not to have it dominate visually in the space led to the decision to locate it to one side. Additionally, current ASDs are assuming this (newer) usage of technology.**

1.5. The Small Chapel ASD concept forces large congregations to pass through to the Worship and Activity Center space from single doors to attend worship service and memorials. The single doors are equipped with exit devices that are not wide enough to allow caskets. The Coat Room door, adjacent to the Activity is used to bring caskets in and out of the Worship Center during memorial services. **The currently developing ASD will include double doors into Worship Center.**

1.6. Watch Care toilet is not child size and is more difficult for toddlers to use. **The currently developing ASD will include child scaled features and fixtures.**

1.7. It was noted that the projectors located in the Worship Center and Activity Center are wall mounted and not recessed. Although the projectors are surface mounted, they are not easily accessible and the users are experiencing problems with filters and bulb replacement. **The ASD allows for flexibility when planning the A/V design, to provide recessed or surface mounted equipment. Recessed projectors sometimes have problems with overheating. 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 (keeping in mind that there were deliberate compromises made to target specific facility size and cost) 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:

(Administrative Spaces)

(The Worship Center)

2.1. The cable access doors on recessed floor power/data access units are breaking off since they do not close completely when cords/cables are plugged. Recommend that the unit have a door that has slots for cables that allows the door to be completely closed when the cords/cables are plugged in. In addition, the User prefers that the power/data outlets at both the Worship Center and Activity Center raised platforms/stages be recessed so cords/cables/jacks cannot be accidentally knocked causing a cord/cable to be pulled out or the jack to break (this was only done in the Worship Center for the facility). **This issue has been specifically addressed in the ASD text. While the ASD requires the stage floor to have a grommet or hatch to manage electrical and communication cables, adding verbiage that is more explicit could improve the problem for future facilities.**

2.2. Chaplain Naye, also a musician, indicated that the chapel has not been designed acoustically for music. There is a lot of reverberation in the worship center. The Chaplain noted that acoustical panels might have helped prevent some of the reverberation. **The currently developing ASD will include guidance for ceiling treatment to mitigate acoustical problems in the Worship Center.**

2.3. The accordion partitions appear to be holding up well with the exception that the locking mechanism is not adequate and has had to be retightened. The partitions are difficult to lock in the closed position, two people are necessary to hold the partitions in place and lock them. **The accordion partitions in this facility are working well; however, the currently developing ASD text will be modified to eliminate this control separation choice.**

2.4. Funding of non MCA items such as A/V system, kitchen appliances, etc. was a problem. At the start of newer projects the COS is now trying to clarify to the local Geographic District PM, post chaplain/Garrison and local DPW office which items will not be MCA funded and which items the post chaplain/Garrison will have to acquire funding for such as the A/V system and mission unique items. Huntsville Corps of Engineers (HNC) will not purchase mission unique items as part of the furniture package. **This was an early facility in the most recent RFP process and the CoS team definitely learned lessons later that could have made coordination for this facility smoother. Even then, experience tells us that the Army Regulation required separations between chapel features will always make this coordination inherently difficult to simplify.**

2.5. The bulbs in the Worship Center have to be changed frequently, about three times a year. Bulbs are difficult to replace, they wait until at least five have burned out before having them replaced. **Private Sector religious facilities sometimes include relatively expensive catwalk systems that allow for lamp changes to be easily accomplished. Some do not feel that the expense for the catwalk system is appropriate and have to contract out for this task. Since appropriate use of Army resources is also important for such decisions, OCCH has also not directed that a full catwalk system be used. The CoS team has experimented with a multitude of techniques to try to provide a "good" (but not perfect) solution and will continue to do so in hopes of finding an appropriate middle ground.**

2.6 Resilient trim installed at the Worship Center raised platform steps and edges are coming loose. The user had to use fasteners on the edging to the step to keep it in place. **Adding appropriate verbiage, warning of the possibility of problems with this form of installation, could improve the problem for other facilities.**

(The Activity Center)

2.7 The facility has carpet on the Activity Center stage (the ASD calls for hard surface flooring but allows some latitude for local preference). In hindsight, they would have preferred a hard surface flooring such as wood or VCT flooring. **The floor finish decision (which deviates from the normal or "default" finish requirement of the ASD) has proved to be a problem. The currently developing ASD does not include this feature (the stage).**

2.8 User is happy with aesthetics of painted wood wainscot in Worship Center and Activity Center even though painting is required to cover up markings from tables/chairs/dollies and general use. **This was gratifying evidence of the forethought put into the 2004 ASD and this specific project, even with the extra maintenance.**

2.9 Stage drapery is becoming difficult to open and close and drapery is coming off hooks. Drapery hardware provided needs to be able to support the weight of the drapery. **The newer ASD guidelines for FY15 projects and beyond do not have stage so this will not be an issue.**

(The Baptistery Suite)

2.10. While this facility includes a pre-manufactured baptismal pool, the unit does exhibit some troublesome characteristics. Originally, no handrail had been included to assist people in getting in or out. Subsequently, handrails were added after the first lessons-learned. The heater control is in a bad location; the access door to the heater control is very small and is located in the storage room where several items must be moved a cleared out of the way, before gaining access to the door. Unlike other installations, the baptismal pool operates as intended by filling and draining without any problems. **Additional appropriate verbiage to the ASD text could improve the problem for most facilities.**

(Audio/Visual System Issues)

2.11. The performance of the completed A/V system has been excellent and the customer representatives are very happy with it. It was recommended the A/V control room needs a dedicated cooling system to handle the heat load generated by the equipment. Additionally, the A/V control room door was modified to allow better airflow and circulation to keep room temperatures normal. **The ASD text does not describe this requirement. Additional research and adding additional appropriate verbiage to the ASD text could improve the problem for most facilities.**

2.12. A suspension system was added to the cameras in the building to prevent shaking of the cameras that was occurring. The User no longer has problems since the suspension system was added. No definitive cause for the shaking has ever been determined. **This is a specific problem for this facility that does not reflect on the ASD or standard construction procedures.**

(The Kitchen Suite)

2.13. This project kitchen exactly matched the ASD defined kitchen (both the MCA and OMA portions). The appearance and the performance of the completed kitchen are and have been excellent and the customer representatives are very happy with it. **This is encouraging, the process of procuring and coordinating these systems is very difficult, but a successful system supports successful ministry in countless ways.**

2.14. Only one sink in the kitchen has a garbage disposal, they would have preferred that both sinks have garbage disposals. **The newer ASD guidelines developed for FY15 projects and beyond require a garbage disposal for each sink.**

2.15. The building users have purchased additional freezers and refrigerators to meet their needs of an expanding congregation. **This is encouraging; however, the ASD does not account for this equipment meaning something else has been displaced to accommodate the additional freezer and refrigerator.**

(The Blessed Sacrament Space)

(The Sacristy and Robing Suite)

(Multi-purpose/Classroom Spaces)

2.16. User purchased additional supply cabinets for classrooms to store books and other materials. **This is encouraging; however, the 2004 ASD was hampered by outside restrictions regarding additional storage.**

(The Toddler Nursery Accommodations)

(Vestibules/Lobbies/Corridors/Stairways)

2.17. There is not an automatic door push button for handicapped access. The installation uses a system named ICE (Installation Customer Evaluation), for customer feedback. Some time ago, someone placed a critical comment in the ICE box, regarding the absence of an automatic door. **While this is a problem that can resist being solved in spite of the greatest care, it has not been specifically addressed (warned about) in the ASD text and adding appropriate verbiage could improve the problem for most facilities.**

(Storage Spaces)

2.18. Under stage storage doors have been modified so they are sturdier and the storage door opening can be accessed easier. Originally, doors lifted up and were supported by legs that were not very sturdy. Doors now lift up and recess back into storage area. **This is a specific problem for this facility that does not reflect on the ASD. Overall, the outcome has proved to be excellent.**

(Toilet Rooms and Janitor's Closets)

2.19. Smells are coming from the drains in the restrooms. Additionally, there is a problem with the back-to-back water closets in the men and women's toilet rooms. If the women's water closet is allowed to set without flushing for a period, flushing will cause water in the men's water closet to splash out of bowl. **This is a specific problem for this facility that does not reflect on the ASD.**

2.20. A shelf with hooks was not originally provided in the janitor's closet; this has since been added. **The ASD addresses this properly, but for this facility something accidentally failed in the process.**

(Building Features and Finishes)

2.21. A number of porcelain floor tiles have had to be replaced since they are lifting up and becoming a tripping hazard for women with high heels. Flooring has an acoustical material installed beneath the tile to help with the acoustical qualities of the floor; no acoustical problems have been reported. **This is a specific problem for this facility that does not reflect on the ASD. Overall, the floor finish decision (which is the "default" finish requirement of the ASD) has proved to be excellent.**

2.22. See 2.6, 2.7, and 2.8

2.23. The User does not have any concerns with the lighting levels in the facility; they are adequate. **This is encouraging; a successful system supports successful ministry in countless ways.**

2.24. Electrical outlets appear to have been installed improperly (some are loose and plates are breaking). Project COR indicated it is too late to go back to the building contractor to correct this problem. **This is a specific problem for this facility that does not reflect on the ASD.**

2.25. The closers on the exterior doors at the entrance and vestibule are malfunctioning. Some of the components have been replaced; however, the users continue to experience trouble with subject doors. **This is a specific problem for this facility that does not reflect on the ASD.**

2.26. Bugs are entering the building at exterior doors where there is a gap between the floor and bottom of the door. The threshold has been replaced in some locations. **This is a specific problem for this facility that does not reflect on the ASD.**

2.27. Water was entering the building on the northwest side and under the exterior doors on this side. The retaining walls were re-built and the slope of the concrete to the drains outside the doors was increased to help prevent the water from entering. **This is a specific problem for this facility that does not reflect on the ASD.**

(Furniture, Appliances, and Equipment Items)

2.28. The folding chairs are failing; the base of the seat is constructed of a fiberboard type material that is splitting/breaking apart. They hold no more than approximately 150 lbs before becoming damaged. The User has had to throw away about 30 chairs due to damage since they are not repairable. **The manufacturer is National Public Seating. The ASD requirements might be modified to address this concern. The COS will make the Huntsville Corps of Engineers (HNC) purchasing group aware of these issues so HNC can apply these lessons learned to future chapel furniture purchases.**

2.29. The folding tables are too heavy for easy set up, moving and reconfiguration. The tables are also beginning to sag in the middle and some the table legs are starting to come apart from the tabletop. The tables were already showing wear and tear at the Phase 1 Review. There is no manufacturer name on the tables. **The ASD has recently been revised to require tables that are lighter weight in design. The COS will make the Huntsville Corps of Engineers (HNC) purchasing group aware of these issues so HNC can apply these lessons learned to future chapel furniture purchases.**

2.30. The original podiums provided, as part of the FF&E package, did not hold up well and have been replaced. **The COS will make the Huntsville Corps of Engineers (HNC) purchasing group aware of these issues so HNC can apply these lessons learned to future chapel furniture purchases.**

2.31. The User has been happy with the ecclesiastical equipment, including pews. They have added casters to items such as the altar, lectern and pulpit to increase their ease of mobility. **The FY15 ASD has been modified to reflect this requirement. In general, the User has not had issues with the other furniture.**

2.32. Signage does not have changeable inserts for room names. The FY15 ASD has been revised to clarify the requirement for changeable inserts for rooms where function, room name or personnel name may change. **The ASD addresses this properly, but for this facility something accidentally failed in the process. (Equipment Rooms and Systems)**

2.33. The building users think the sounds the HVAC system makes is unobtrusive and does not interfere with the function of the building. **The process of procuring and coordinating these systems is very difficult, but a successful system supports successful ministry in countless ways.**

2.34. The mechanical equipment specified in the RFP was not provided; McQuay was used instead of York or TRANE. Because the requirement in the RFP was not met, the contractor agreed to provide a 5-year service warranty. **This is a specific problem for this facility that does not reflect on the ASD.**

(Site Issues)

2.35. A playground was added to the site after construction was complete, as part of a separate contract. **This is encouraging.**

PART THREE, UNIQUE ISSUES

No issues surfaced that are not already recorded elsewhere in this report.

Not used.

PART FOUR, THE REVIEW PROCESS AND PARTICIPANTS

The following team of participants gathered at the Liberty Chapel on June 5, 2012. 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 discussion reached an appropriate point, the team shifted to a tour of the facility with further items brought up as we went.

Askelon M. Parker CENWO-ED-DG 402-995-2173	askelon.m.parker@usace.army.mil
Lori O. Hoelting CENWO-ED-DF 402-995-2155	lori.o.hoelting@usace.army.mil
Harrison Anderson IMCOM 804-734-7322	harrison.r.anderson.ctr@mail.mil
Diane Hall IMCOM-RSO 804-765-3024	diane.hall2.civ@mail.mil
Naomi Rankins IMCOM-RSO 804-734-6493	naomi.rankins@us.army.mil
Kinyata Evans Ft. LEE DPW-MP 804-734-5150	kinyata.l.evans.civ@mail.mil
Chaplain (LTC) Robert Nay IMCOM-RSO 804-734-6494	robert.nay@us.army.mil
Candace Filak USACE-Norfolk 804-734-4041	candice.l.filak@usace.army.mil

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

FOR THE COMMANDER:



JOHN J. BERTINO, JR., P.E.
Chief, Engineering Division

DISTRIBUTION:

OCCH-IRML, Chaplain (LTC) Samuel S. Lee
HQ-IMA, Chaplain (MAJ) Kenneth L. Haftorson
HQ-IMA, Chaplain (LTC) Robert Nay
Fort Lee IMCOM, Harrison Anderson
Fort Lee IMCOM-RSO, Diane Hall
Fort Lee IMCOM-RSO, Naomi Rankins
Fort Lee DPW-MP, Kinyata Evans
Fort Lee, USACE-Norfolk, Candace Filak
CENAO-PM-JS, Greg Hegge
CENAO, CIV, John Royster
CENWO-ED-D, Robert. B. Saari
CENWO-ED-D, William D. Miller
CENWO-ED-D, Jeffery A. Van Hove
CENWO-ED-D, Gary M. Sasse
CENWO-ED-DA, Michael T. Smith
CENWO-EDDC, Steven L. Ott
CENWO-ED-DF, Wayne R. Boeck
CENWO-ED-DG, Bernard R. Gorup
CENWO-ED-DA, John S. Eurek
CENWO-ED-DA, Galen D. Rejda
CENWO-ED-DC, James H. Lowe
CENWO-EDDC, Daniel Otterby
CENWO-ED-DF, John, L. Whisler III
CENWO-ED-DF, Matthew C. Hebert
CENWO-ED-DF, Lori O. Hoelting
CENWO-ED-DG, Askelon M. Parker