



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

CENWO-ED-DG

28 June 2013

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

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 Light fixtures in the Worship Center are difficult to change. The users suggest Light Emitting Diode (LED) fixtures in to reduce the frequency of replacing lights. A long-standing issue with all of the Chapels (and a problem for this facility) is how to best accommodate the changing of lighting lamps in the high-ceilinged areas, i.e. the Worship Center. **Private Sector religious facilities sometimes include raising and lowering controls that allow for easy lamp changes. The Center of Standardization (CoS) is exploring various techniques to provide a variety of solutions; however, the current ASD only refers to a raising and lowering lighting system. (This comment is the same as 2.4)**

1.2 A Jewish congregation, considering relocating into this facility, cited the Department of Defense (DoD) requirements to provide automatic light operation as a conflict to their religious requirements. Since we know that a Jewish congregation is meeting happily in the Fort Hood Chapel Complex, this may be a finer point of doctrine not common to all Jewish faith branches. **One solution might consider**

CENWO-ED-DG

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

having spaces with an override to keep lights on or off. The CoS will consult again with OCCH and modify (or retain) the ASD requirements at their direction. (This comment is the same as 2.5)

1.3 Access to the circulator motor is hard reach; the access door and baptistery motor are opposite of each other. There are no lights in the crawl space under the baptistery. Additionally, replacing two baptistery motors have magnified the shortcomings of access and lack of light in this space. **Additional appropriate verbiage to the ASD text could improve the problem for most facilities. (This comment is the same as 2.8)**

1.4 One of the projector screens does not function properly and will not go down on its own consistently. Additionally, the microphone output does not go to the Activity Center in combined mode. The Audio/Video (A/V) system is talking to the Worship Center, except the microphones. **The current ASD requirements will focus on a technology preference that includes using monitors. Additionally, the process of designing and coordinating these systems is difficult. The ASD will include additional information regarding the design and coordination of the A/V system. (This comment is the same as 2.9)**

1.5 The ventilating characteristics of the projector recesses (in the partition) are insufficient for the needs of the equipment. Adding fans help eliminate the projectors from overheating and shutting off, during worship services. Additionally, the projectors need to be accessible from the rear. **The ASD does not get into specific working drawing but some additional text may assist in avoiding this problem. (This comment is the same as 2.10)**

1.6 On the icemaker, the condensate drain line needs to extend to the floor drain; the floor tiles are staining. **The ASD does not include this level of detail; however, additional appropriate verbiage to the ASD text could improve the problem for other facilities. (This comment is the same as 2.12)**

1.7 The user recommends that there be an additional 24" of deep storage to accommodate larger items. They suggest adding a full height unit that is 24" deep, near the room entry. **Additional appropriate verbiage to the ASD text could improve the problem for other facilities. (This comment is the same as 2.16)**

1.8 Padded pews are hard to keep clean; however, overall the users like the pews and think they function well. **The pew protection decision was harder to implement and this may happen in other chapels; the CoS will undertake more study of the options available. (This comment is the same as 2.23)**

1.9 Consider adding additional Local Operating Console (LOC) at secondary entrance. **Additional research and adding additional appropriate verbiage to the ASD text could improve this issue for other facilities. (This comment is the same as 2.26)**

1.10 Consider adding Automated External Defibrillator (AED) somewhere in the facility. **Additional research and adding additional appropriate verbiage to the ASD text could improve this issue for other facilities. (This comment is the same as 2.27)**

1.11 A fire alarm might cause panic when a large crowd is present; consider a single device located where the speaker can see it and then direct the necessary action. **Additional research and adding additional appropriate verbiage to the ASD text could improve this issue for other facilities. (This comment is the same as 2.28)**

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:

(Administrative Spaces)

2.1 The Administrative Spaces function well and serves the Unit Ministry Team as intended. **Although the Administrative Space in this facility functions well, the Administrative Space is significantly larger in the 2012 ASD and provides more square footage in the group office location.**

2.2 Administrative Spaces, on the south side of the building, are colder than other areas in the building. A faulty actuator occurred in January of 2013; subsequently, DPW addressed the issue and the malfunctioning actuator is now resolved. **The ASD text does not describe specific building system requirements; this is likely a project specific issue.**

(The Worship Center)

2.3 The acoustics of this room perform well when the A/V system is set correctly. **This is gratifying evidence of the intent of the ASD, providing enough flexibility for user's preference of building finish materials.**

2.4 Light fixtures in the Worship Center are difficult to change. The users suggest LED fixtures in to reduce the frequency of replacing lights. A long-standing issue with all of the Chapels (and a problem for this facility) is how to best accommodate the changing of lighting lamps in the high-ceilinged areas, i.e. the Worship Center. **Private Sector religious facilities sometimes include raising and lowering controls that allow for easy lamp changes. The CoS is exploring various techniques to provide a variety of solutions; however, the current ASD only refers a raising and lowering lighting system.**

2.5 A Jewish congregation, considering relocating into this facility, cited the DoD requirements to provide automatic light operation as a conflict to their religious requirements. Since we know that a Jewish congregation is meeting happily in the Fort Hood Chapel Complex, this may be a finer point of doctrine not common to all Jewish faith branches. **One solution might consider having spaces with an**

CENWO-ED-DG

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

override to keep lights on or off. The CoS will consult again with OCCH and modify (or retain) the ASD requirements at their direction.

(The Activity Center)

2.6 Closure at under stage storage in Activity Center was accomplished by drapery and not “access doors that are both very strong and attractive from the outside” as required by the ASD. The drapery is difficult to use and the hardware is failing. **The CoS will consider adding language to the ASD, that drapery for “doors” at under stage storage not be allowed on future projects since it does meet ASD requirements. Additionally, the 2012 ASD does not include under stage storage in the Activity Center. If this situation exist on future projects, addressing such issues during the design review will be most useful.**

(The Baptistery Suite)

2.7 The Plexiglas window is leaking. **While the ASD stresses comprehensive good design, it does not include this level of detail. Any facility such as this is inherently complicated enough to make addressing every feature difficult for the designer/contractor.**

2.8 Access to the circulator motor is hard reach; the access door and baptistery motor are opposite of each other. There are no lights in the crawl space under the baptistery. Additionally, replacing two baptistery motors have magnified the shortcomings of access and lack of light in this space. **Additional appropriate verbiage to the ASD text could improve the problem for most facilities.**

(Audio/Visual System Issues)

2.9 One of the projector screens does not function properly and will not go down on its own consistently. Additionally, the microphone output does not go to the Activity Center in combined mode. The A/V system is talking to the Worship Center, except the microphones. **The current ASD requirements will focus on a technology preference that includes using monitors. Additionally, the process of designing and coordinating these systems is difficult. The ASD will include additional information regarding the design and coordination of the A/V system.**

2.10 The ventilating characteristics of the projector recesses (in the partition) are insufficient for the needs of the equipment. Adding fans help eliminate the projectors from overheating and shutting off, during worship services. Additionally, the projectors need to be accessible from the rear. **The ASD does not get into specific working drawing but some additional text may assist in avoiding this problem.**

2.11 The user chose to provide additional structural support above the recessed projector to help access the projector for routine maintenance. **The ASD allows for flexibility in regards to such items.**

(The Kitchen Suite)

2.12 On the icemaker, the condensate drain line needs to extend to the floor drain, the floor tiles are staining. **The ASD does not include this level of detail; however, additional appropriate verbiage to the ASD text could improve the problem for other facilities.**

CENWO-ED-DG

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

2.13 The coffee maker is hard plumbed into the water system. **The ASD allows for flexibility in regards to such items, DPW approval pending.**

2.14 Kitchen appliances should include commercial dishwashers. **Since appropriate use of Army resources is important for such decisions, OCCH had directed that the residential type of kitchen appliances be required in the ASD. Unfortunately, this did not match with the desires of the Garrison PDT members. The current ASD does provide more options regarding commercial kitchen appliances.**

2.15 The location of the refrigerator is a problem as it negatively affects pedestrian movement through the kitchen. **The ASD does include a Standard Design (SD) showing a location for the refrigerator. Since the SD allows for some flexibility in regards to such items, it is difficult for the designer/contractor to predetermine if an alternate layout will work as well as the intended layout.**

(The Blessed Sacrament Space)

(The Sacristy and Robing Suite)

2.16 The user recommends that there be an additional 24" of deep storage to accommodate larger items. They suggest adding a full height unit that is 24" deep, near the room entry. **Additional appropriate verbiage to the ASD text could improve the problem for other facilities.**

(Multi-purpose/Classroom Spaces)

2.17 The users like this space and thinks if functions well for its' intended purpose. The original design provided surface mounted speakers, which now include recessed speakers. **This is gratifying evidence of the intent of the ASD, to provide enough flexibility for user's preferences.**

(The Toddler Nursery Accommodations)

(Vestibules/Lobbies/Corridors/Stairways)

2.18 Interior vestibule doors are equipped with panic bars and are sometimes locked unintentionally, becoming problematic for building occupants. **The ASD text does describe specific building hardware requirement; however, the onus to comply with life-safety issues is the responsibility of the designer. This may be a project specific issue.**

2.19 Doors at main entrance need automatic door openers for visitors that need assistance opening the doors. **While this problem exists in some of the 2004 ASD projects, the current 2012 ASD text includes appropriate verbiage that will improve the problem for most facilities.**

(Storage Spaces)

2.20 The intention of this facility is to support a full range of Chaplaincy programs and military community activities. However, an unintended consequence of having such a featured facility is that the military community is using it far more often and in far larger numbers than ever envisioned in its design. While the Unit Ministry Team and the volunteers have been able to increase their managing tools to

CENWO-ED-DG

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

respond to that, some of the “fixed” features cannot keep up. Storage capacity in the facility is full with very few options or alternatives. **The storage restrictions hampering this facility will not exist in future facilities; the 2012 ASD will significantly improve this situation.**

(Toilet Rooms and Janitor’s Closets)

2.21 The Janitor’s Closet works well; however, the Installation’s janitorial staff stores all its’ cleaning supplies in the janitor’s closet and this leaves an inadequate amount of storage space for the facility staffs' cleaning supplies. **The storage restrictions hampering this facility will not exist in future facilities; the 2012 ASD will significantly improve this situation.**

(Building Features and Finishes)

2.22 A carillon system is installed; however, it is not used. **The ASD allows for flexibility in regards to such items.**

2.23 Padded pews are hard to keep clean; however, overall the users like the pews and think they function well. **The pew protection decision was harder to implement and this may happen in other chapels; the CoS will undertake more study of the options available.**

(Furniture, Appliances, and Equipment Items)

2.24 There is a problem with the folding seating chair leg caps coming off and the floor is being damaged. This item is being taken care of through the furniture manufacturers warranty process. **The CoS has made Huntsville Engineering Support Center (HNC) procurement aware of problem with this manufacturer.**

2.25 The user prefers that folding tables be lighter in weight. **This has now been addressed in the ASD.**

(Equipment Rooms and Systems)

2.26 Consider adding additional Local Operating Console (LOC) at secondary entrance. **Additional research and adding additional appropriate verbiage to the ASD text could improve this issue for other facilities.**

2.27 Consider adding AED (Automated External Defibrillator) somewhere in the facility. **Additional research and adding additional appropriate verbiage to the ASD text could improve this issue for other facilities.**

2.28 A fire alarm might cause panic when a large crowd is present; consider a single device located where the speaker can see it and then direct to the necessary action. **Additional research and adding additional appropriate verbiage to the ASD text could improve this issue for other facilities.**

CENWO-ED-DG

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

(Site Issues)

2.29 Fire Department wants bollards to be removable. **This need varies widely, but rarely does the PDT appropriate to plan for them. The ASD text does not address this issue specifically; the criteria for this item may be subject to the requirements of the Installation's Design Guide.**

2.30 Site drainage issues tend to leave some areas of the site with standing water. **The ASD stresses comprehensive good design and it does address the affect of storm drainage on the building site.**

PART THREE, UNIQUE ISSUES

2.31 Vertical cracking appears on the cast stone units on the south side of the structure, where the cast stone units back up against precast panels. The contract set did not show the precast panel joints lining up with the cast stone expansion joints. **Since the south side of the building experiences severe thermal stress, it is logical that thermal movement of the precast panels may occur. If the cast stone expansion joints were not lined with the precast panel joints, any movement of the precast panels would likely reflect through the cast stone and cause cracking of the cast stone.**

PART FOUR, THE REVIEW PROCESS AND PARTICIPANTS

The following team of participants gathered at the Fort Leonard Wood Chapel on June 28, 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 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

Wayne R. Boeck

CENWO-ED-DF 402-995-2151 wayne.r.boeck@usace.army.mil

Dan Otterby

CENWO-ED-DC 402-995-2146 daniel.otterby@usace.army.mil

Galen D. Rejda

CENWO-ED-DA 402-995-2113 galen.d.rejda@usace.army.mil

Chaplain (LTC) Michael J. King

IMLD-RS 270-307-2586 michael.j.king45.mil@mail.mil

Gary Martin

CENWK-CD-LS 573-855-9216 gary.d.martin@usace.army.mil

Joshua Lix

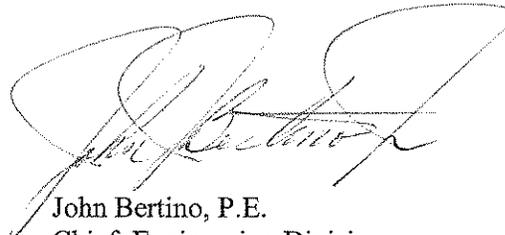
CENWO-ED-DG

SUBJECT: End State Technical Review Report, Phase II, construction completed 2012. Fort Leonard Wood, MO, Chapel (PN 56336/72139)

CENWK-CD-LS	816-389-3523	joshua.c.lix@usace.army.mil
Randy Knutson		
DPW	573-596-0901	randy.t.knutson.civ@mail.mil
Ralph Mills		
Fire Department	573-596-1379	daniel.r.mills24.civ@mail.mil
Jack Strickland		
G-6 CRXXI	573-563-6080	jack.strickland@us.army.mil

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.

FOR THE COMMANDER:



John Bertino, P.E.
Chief, Engineering Division

Encl

CF:

OCCH-IRML, Chaplain (LTC) Antonio J. McElroy
HQ-IMA, Chaplain (MAJ) Kenneth L. Haftorson
Fort Leonard Wood IMLD-RS, Chaplain (COL) Gary Brown
Fort Leonard Wood IMLD-RS, Chaplain (LTC) Michael King
Fort Leonard Wood CENWK-CD-LS, Gary Martin
Fort Leonard Wood CENWK-CD-LS, Joshua Lix
Fort Leonard Wood DPW, Randy Knutson
Fort Leonard Wood Fire Department, Ralph Mills
Fort Leonard Wood G-6 CRXXI, Jack Strickland
CENWO-ED-D, Robert B. Saari
CENWO-ED-D, Jeffery A. Van Hove
CENWO-ED-D, Gary M. Sasse
CENWO-ED-DA, Michael T. Smith
CENWO-ED-DC, Steven L. Ott
CENWO-ED-DF, Wayne R. Boeck
CENWO-ED-DG, Bernard R. Gorup
CENWO-ED-DA, Galen D. Rejda
CENWO-EDDC, Daniel Otterby
CENWO-ED-DF, John, L. Whisler III
CENWO-ED-DF, Lori O. Hoelting
CENWO-ED-DG, Askelon M. Parker